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The Wage Premium on Tertiary Education

NEW ESTIMATES FOR 21 OECD COUNTRIES COUNTRIES

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English - Or. English

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ABSTRACT/RÉSUMÉ

The wage premium on tertiary education: new estimates for 21 OECD countries

This paper presents cross-section estimates of gross hourly wage *premia* on tertiary education. They are based on a unified framework for 21 OECD countries from the 1990s to the early 2000s and use international household surveys to maximise international comparability. The results of the "augmented" *Mincerian* wage equations point to an average hourly gross wage premium on completed tertiary education of 55% in 2001 (country-gender average), translating into a premium of close to 11% *per annum* of tertiary education. Wage *premia* display little variation over time but huge cross-country variation: at 6% they are lowest in Greece and Spain (men and women) as well as in Austria and Italy (women) while reaching 14%-18% in Hungary, Portugal, and in most Anglo-Saxon countries. Given that the wage *premium* is the single most important driver of private returns to education, the results presented here have potentially important implications for policies that aim at increasing investment in human capital.

JEL classification: I21, I22, J31.
Keywords: Wage premium, Mincer equation, Returns to education, Educational attainment, Household survey, Labour market experience.

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La prime salariale pour l'éducation supérieure : nouvelles estimations pour 21 pays de l'OCDE

Cette étude présente des estimations transversales de la prime salariale horaire brute pour l'éducation supérieure qui reposent sur un cadre harmonisé pour 21 pays de l'OCDE entre les années 90 et le début des années 2000. L'étude est basée sur des enquêtes internationales auprès des ménages afin de maximiser la comparaison entre pays. L' « extension » des équations salariales de Mincer donne comme résultat une prime salariale horaire moyenne brute à l'achèvement d'un diplôme d'éducation supérieure de 55% en 2001 (en moyenne pour les hommes et les femmes pour tous les pays), ce qui est équivalent à près de 11% par année d'éducation supérieure. Les primes salariales varient peu au cours du temps mais de manière significative à travers les pays : les plus faibles sont en Grèce et en Espagne à 6% (hommes et femmes) ainsi qu'en Autriche et en Italie (femmes) alors qu'elles atteignent 14%-18% en Hongrie, au Portugal et dans la plupart des pays anglo-saxons. Étant donné que la prime salariale est le déterminant le plus important du rendement privé de l'éducation supérieure, les résultats peuvent avoir des implications importantes pour les politiques visant l'augmentation du stock de capital humain.

Classification JEL : I21, I22, J31.
Mots clés : Prime salariale, Équation de Mincer, Rendements de l'éducation, Niveau d'instruction, Enquête auprès des ménages, Expérience sur le marché du travail.

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THE WAGE PREMIUM ON TERTIARY EDUCATION: NEW ESTIMATES FOR 21 OECD COUNTRIES

By

Hubert Strauss and Christine de la Maisonneuve[1]

1. Introduction and main findings

1. The accumulation of human capital through education and training is widely recognised as an important driver of economic growth.[2] Yet, as the decision to continue schooling is voluntary beyond the secondary level, it depends not only on talent and inclination but also on the balance of costs of and benefits from post-secondary education. Therefore, assessing the returns for education is a key input for policymakers who want to bolster a country's endowment with human capital through an increase in educational attainment.[3]

2. This paper focuses on the single most important component of the private return from education (see Boarini and Strauss, 2007): the gross wage premium on tertiary education. There are at least two additional reasons for paying particular attention to wage *premia*. First, the wage premium earned by existing graduates is easy to observe, so high-school leavers can be assumed to take it into account when deciding for or against enrolment in tertiary education. Second, to the extent that wages reflect marginal labour productivity, estimates of wage *premia* are sometimes used to assess the quality of human capital in an economy with a view to correcting simpler measures based on years of schooling or attainment levels.

3. The paper follows an augmented Mincerian wage equation framework with the gross hourly wage as the dependent variable, estimated on individual cross-sections. The latter are obtained from household data for 21 OECD countries and covering 2 to 14 survey waves. The time period runs from 1991-2004 for the United Kingdom, from 1994-2004 for the United States and from 1994-2001 for most of the other countries. The traditional Mincer equation is augmented by a number of labour market-related control variables such as job tenure, type of employment contract, (public *versus* private) sector affiliation,

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2. See Sianesi and Van Reenen (2003) for a survey of empirical studies on macroeconomic returns to education.

3. The other large area of policymaking in this respect is university access policies: Individuals may be constrained either by a lack of necessary educational credentials (*e.g.* in countries rationing access to upper-secondary attainment) or by a lack of liquidity. See Oliveira Martins *et al.* (2007) for a joint empirical analysis of demand and supply-side determinants of investment in tertiary education and how policies affect them.

and firm size. Furthermore, the specification controls for over- and under-qualification of wage earners in their current occupation.

4. The estimations are country-specific and draw from a common sample of men and women. Over and above the usual gender dummy in the equations, the education and experience variables are interacted with the gender dummy, thereby obtaining gender-specific results for the tertiary education wage premium, the wage "penalty" on not completing upper-secondary education, and the annual labour market experience premium. The results highlight huge cross-country differences. The gross wage premium to tertiary education ranges from 27% for Spanish men to 90% for Hungarian and US degree holders. Cross-country variation remains high even after accounting for the average duration of tertiary studies. The gross wage premium *per annum* of tertiary education is found to lie in an interval from 5.5% for men in Greece and Spain as well as for women in Austria and Italy, to 17% for men and women in Hungary and the United States, and for women in Ireland and Portugal.

5. The paper is structured as follows. Section 2 provides a brief discussion of methodological issues raised in the literature on microeconomic returns to education in order to highlight the value-added of this contribution and its (data-related) limitations. Section 3 presents the empirical specification of the Mincerian wage equation. Section 4 describes the data sources, the sample selection process and the construction of variables, illustrating their country-specific distributions. The results are presented and discussed in comparison with earlier estimates in Section 5. Section 6 concludes.

2. Methodological issues related to the estimation of educational wage *premia*

6. Most studies on returns to education use *Mincerian* equations. The latter relate the log of earnings to the number of completed years of schooling and experience (often as a quadratic term).[4] While Mincer (1958) considers the wage premium to be just a compensation for working in jobs requiring longer education (the net present values of earnings streams net of education costs being identical for all levels of education), Mincer (1974) derives a similar empirical specification from a full human capital model building on the theoretical work by Becker (1964) and Ben-Porath (1967).[5] The original Mincer equation assumes a linear effect on earnings of each year of education regardless of the attainment level. This paper, however, allows for differential effects of upper-secondary and tertiary education.

7. There are a number of issues to be borne in mind when relating the Mincerian schooling coefficient to the causal effect of schooling on earnings.[6] First, as an investment-decision variable, years of schooling and education attainment should be considered as endogenous, implying a possible bias in OLS estimates of the schooling coefficient. The *endogeneity bias* may arise either from unobserved variation in ability or from unobserved heterogeneity. If those who extend education beyond compulsory schooling have greater ability than others, the estimated Mincer coefficient is biased upwards since part of the productivity differential is actually due to innate abilities or skills acquired outside school (*ability bias*). The ability bias may interact with individual subjective discount rates (or *heterogeneity bias*), resulting in an under- or over-estimation of the true effect of schooling on earnings. But the total direction of bias in OLS estimates is ambiguous. There is a whole strand of the empirical literature dealing with the endogeneity bias, namely by using instrumental variables (*e.g.* parents' education). This option could not be followed in this paper due to the lack of data. Nonetheless, the consensus from the empirical literature is

4. See Psacharopoulos and Patrinos (2004) for a survey of the empirical literature on Mincer equations.

5. For more details see Heckman *et al.* (2005) where these two interpretations of the Mincer specification are discussed as the "Compensating Differences Model" and the "Accounting-Identity Model".

6. See Card (1999) and Harmon *et al.* (2003) for an overview of these issues.

that this bias in the estimated Mincerian wage premium is likely to be small (*e.g.* see Card, 1999, and Woessmann, 2003).

8. Second, if there is *measurement error* in the education variable (one year of tertiary schooling representing different stocks of human capital accumulated depending on school quality and individual characteristics), the schooling coefficient will be biased downward.

9. Third, there is also a potential endogeneity bias related to labour supply effects. Indeed, every new graduate adds to the pool of skilled workers, thereby making the relative supply of skilled labour less scarce and lowering the wage *premium* that triggered the investment decision.[7]

10. Finally, Heckman *et al.* (2005) point out that using ex-post estimates of earnings-schooling profiles of existing workers as a decision tool for today's investment decision requires stationarity of earnings across cohorts in the labour market. The latter is rejected for the United States on the basis of 1980 and 1990 Census data. However, in this paper, a full-fledged cohort analysis is not feasible due to the limited time coverage of the available Household Panel Surveys.

3. Empirical specification

11. Tertiary-education wage *premia* are obtained by country and year from individual earnings data following the *Mincerian* approach. Estimates are based on household-level data for three educational attainment levels (less than upper-secondary education, completed upper secondary education, completed tertiary education). The estimation is based on hourly wages, which reflect the impact of education on productivity. Monthly or annual wages would in addition capture the effect of decisions on working hours. There is some positive correlation between working time and educational attainment but it is nevertheless reasonable to assume that the choice of hours worked reflects individual preferences rather than education levels. Experience is proxied by the number of years in the labour market rather than by age, because this allows better disentangling education from experience effects.

12. Household-level data allow controlling for a number of individual characteristics that potentially affect earnings but are not directly related to tertiary education. Failing to control for these characteristics may induce statistical bias when estimating the effect of tertiary education. They include gender, marital status, job tenure (in years), the type of work contract and working in the public *versus* the private sector.[8] The estimates also control for the size of the production unit ("plant size") as it is a well-established empirical fact that large firms tend to pay higher wages than small firms. This wage premium is unrelated to the *ex-ante* decision to engage in tertiary education and hence should be distinguished from the estimated education *premia*. The same reasoning applies to over- or under-qualification of individuals in their current occupation, the final two control variables. The risk that in a given year individuals may work in a job that does not correspond to their educational attainment is not necessarily relevant for their decision to enrol in tertiary education. Indeed, the available evidence suggests that the majority of over-qualified individuals tend to move up over time into an occupational status corresponding to their educational attainment (Dumont, 2005). On balance, controlling for under- or over-qualification tends to increase the estimated wage *premia*.

7. The size of this general-equilibrium effect is somewhat controversial. While Heckman *et al.* (1999) find the graduate-wage-depressing labour-supply effect of graduation to be large enough to undo discounted net lifetime income gains, Lee (2005) finds an only mild reduction in these gains from the labour-supply effect. See Boarini *et al.* (2007) for a discussion and an empirical test of this bias.

8. For this reason, the results presented differ from (and are likely to be more accurate than) earlier estimates based on aggregate incomes by attainment level (see Blöndal *et al.* 2002).

13. The econometric specification is as follows (individual indices are omitted for simplicity):

$$
\begin{aligned}
(1) \quad Log\,(hrw) = {} & c + \alpha_1 \cdot edu1 + \alpha_2 \cdot edu3 + \alpha_3 \cdot edu1 \cdot woman + \alpha_4 \cdot edu3 \cdot woman + \\
& + \beta_1 \cdot exper + \beta_2 \cdot woman + \beta_3 \cdot exper \cdot woman + \\
& + \beta_4 \cdot married + \beta_5 \cdot public + \beta_6 \cdot part\_time + \beta_7 \cdot tenure + \beta_8 \cdot indef\_cont + \\
& + \delta_1 \cdot Log\,(plant\_size) + \delta_2 \cdot overqualif + \delta_3 \cdot underqualif + \varepsilon
\end{aligned}
$$

where:

hrw = gross hourly wages
edu1, *edu3*= dummies for less-than-upper-secondary and tertiary education attainment, respectively
exper = number of years of experience in the labour market
married = dummy for marital status
public = dummy for public sector job
part_time = dummy for part-time worker
tenure = number of years with the same employer
indef_cont = dummy for worker under indefinite-term contract
plant_size = number of employees in the individual's production unit
overqualif, *underqualif* = dummies for over- and under-qualification, respectively

14. The above equation is estimated on an individual cross-section basis rather than a panel mainly for three reasons. First, the *Mincerian* approach is cross-sectional in nature insofar as the variables of the equation usually show little variation over time. A panel approach would require augmenting the model with time-varying variables such as unemployment rates at a very disaggregated level (gender/sector/occupation/attainment-specific) that are not readily available in the datasets exploited here. Second, the focus of this paper is on the returns to education for countries as a whole rather than changes in individual conditions over time. Third, pooling data over time is sometimes warranted in order to increase the efficiency of the estimation but this argument is not compelling here given the already large size of the country-year samples. Despite the large number of right-hand-side variables, multi-collinearity problems are fairly limited (see Annex 1).

15. A methodological issue raised in the literature is that the sample of wage earners may be a non-random selection of the overall sample of persons of working age (sample-selection bias, see for example Heckman, 1979 and 1980, and Hoffmann and Kassouf, 2005). This may bias the marginal effect of education on earnings as measured by the *Mincerian* wage regression especially if the probability of employment depends itself on educational attainment. The two-stage selection model (determining the probability of employment at the first stage and the wage for those employed at the second stage) is one possibility of avoiding this problem but is not followed here because *i)* it would run counter the focus on "standard" wage earners underlying the sample selection strategy followed here; and *ii)* the empirical extent of the problem is very small (see Annex 2). Moreover, correcting for sample selection bias only produces better estimates to the extent that the specification of the selection process is relatively accurate, which may not be straightforward to implement with the data at hand.

4. Data issues

16. The data for the estimation of education wage *premia* and marginal employment probabilities for 21 OECD countries are taken from six different panel databases: the European Community Household Panel (ECHP), the Consortium of Household Panels for European Socio-Economic Research (CHER), the British Household Panel Survey (BHPS), the US Current Population Survey (CPS), the Cross-National Equivalent File (CNEF),[9] and the Household, Income and Labour Dynamics in Australia Survey (HILDA).

9. The CNEF provides comparable household data for four countries (Canada, Germany, the United Kingdom, and the United States) but is used only for Canada.

Household panel data sources are preferred over labour force surveys, which lack detailed wage data for some countries.[10] The first two databases were constructed on a cross-country basis,[11] thereby ensuring consistency of definitions and comparability of values of the variables.

Description of the panel data bases

17. The European Community Household Panel (ECHP) collected data on households and individuals in member countries from 1994-2001 by means of questionnaires centrally designed by Eurostat. At the household level, the themes covered include demography, household income and financial situation, accommodation, and durables consumption (Eurostat, 2003). At the personal level, the data cover employment, unemployment, job search, previous job, activity status during the previous year, income, education and training, health, social relations, migration, and (life) satisfaction. The personal and household identification numbers allow following individuals over time,[12] and links between household members can be identified. The ECHP discontinued own surveys in 1997 for Germany, Luxembourg, and the United Kingdom and incorporated the existing national panel surveys instead, which are available in ECHP format for virtually all waves (1995-2001 for Luxembourg, 1994-2001 for the other two countries). In 2001 the ECHP contained about 121 000 individuals living in some 60 000 households (Table 1). In this study the ECHP is not used for the United Kingdom due to problems with the coding of the educational attainment variable. For Germany and Luxembourg the national panel data set is taken from the ECHP for all years to avoid breaks between 1996 and 1997.

18. For Hungary, Poland, and Switzerland the data used in this study are from the public use version of the CHER database, and were used with the permission of the CHER consortium (represented by CEPS/INSTEAD in Luxembourg). The CHER collected individual and household information for ten countries from national panel data sources and harmonised the variables *ex post*. Its data are available in three wave-specific files (personal, household, and inventory) and a metafile containing time-invariant information on households or individuals. Overall the data are organised under the headings of activity status, demographic background, education and training, employment, income, satisfaction, expenditure, health, durables, housing quality, and organisational variables and weights (Birch *et al.* 2003).

19. The Cross-National Equivalent File (CNEF) is produced and updated at Cornell University (United States). It contains comparable household panel data for Canada, Germany, the United Kingdom, and the United States. The Canadian and British data start in the early 1990s. The main focus of CNEF is on household income. In terms of number of variables, the CNEF dataset is small in comparison with ECHP and CHER on the one hand, and with the underlying national panel surveys, on the other. As a consequence, fewer control variables are available (*e.g.* tenure in current job and the nature of the employment contract are missing). Due to a high number of missing values on educational attainment in the US data files and missing information on individual gross wages for the United Kingdom the CNEF is only used for Canada.[13]

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10. For instance, gross wages are not available in the European Labour Force Survey, and wages are not reported at all for a number of countries prior to 1998.

11. As far as the ECHP is concerned, cross-country coordination occurred *ex ante* as participants in all countries of the former EU-12 were sampled according to the same rules and asked the same questions as from 1994. As to the CHER database, it was built from existing national panel sources by applying a common coding of answers to comparable questions.

12. The exception is Sweden, for which only cross-sectional data are available inside the ECHP.

13. Due to legal provisions protecting privacy, Canadian household data are managed by Statistics Canada and are not directly accessible for the user. Rather, users send analytical programme files to produce the empirical results they wish to obtain. Whenever descriptive statistics are requested, they are transformed so

20. The remaining three datasets are country-specific and represent the leading source of socio-economic micro data of their respective countries. For Australia, this paper uses the confidentialised unit record file from the Household, Income and Labour Dynamics in Australia (HILDA) survey.[14] This is a broad social and economic survey that has been carried out since 2001 (Watson, 2005). At the personal level, the chapters of interest are education, employment history and status, current employment, persons not in paid employment, and family formation and partnering. The British Household Panel Survey (BHPS) began in 1991 and is a multi-purpose study that follows the same representative sample of individuals over years, interviewing every adult member of sampled households. The wave-1 panel consists of some 5 500 households and 10 300 individuals drawn from 250 areas of Great Britain. As for the United States, the Annual Social and Economic Supplement (or March Supplement) to the Current Population Survey (CPS) is the primary source of detailed information on income and work experience. It is used to generate the annual Population Profile of the United States, reports on geographical mobility and educational attainment, and detailed analysis of money income and poverty status. The labour force and work experience data from this survey is used to profile the US labour market and to make employment projections. The CPS is a monthly survey of about 50 000 households conducted by the Census Bureau for the Bureau of Labor Statistics. The survey has been conducted for more than 50 years.

[Table 1. Micro data bases and sample size]

Construction of variables for the Mincerian wage equation

Dependent variable

21. The basic information is current salaries (monthly for ECHP countries, weekly for Australia) and labour earnings during the year preceding the interview (Canada, the United Kingdom and the United States), respectively. These are first brought to a weekly and then to an hourly basis using the number of hours worked reported for the main job (including paid overtime). This implies that only persons reporting the number of hours worked are retained in the sample.[15] Estimations are performed on the natural logarithm of the hourly wage so as to interpret regression coefficients as semi-elasticities. Annual labour earnings in the year preceding the interview are also available in the ECHP but generally not in gross terms as required for the calculation of the internal rates of return to education.[16] In turn, current monthly gross salaries are available for twelve out of the 14 ECHP countries, making post-estimation corrections necessary for the other two.[17] The advantage of current monthly salaries is that they are consistent with the

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that the total is equal to the population of Canada. Hence, the number of individuals in the sample sharing a given characteristic remains unknown.

14 The HILDA Project was initiated and is funded by the Commonwealth Department of Family and Community Services (FaCS) and is managed by the Melbourne Institute of Applied Economic and Social Research (MIAESR). The findings and views reported in this paper, however, are those of the author and should not be attributed to either FaCS or the MIAESR.

15. The total number of hours worked in the main and all additional jobs is also available in the ECHP. It is not used because it would under-estimate the hourly earnings of persons who are self-employed in their secondary job. Admittedly, using hours worked in the main job may lead to an over-estimation of hourly earnings for persons with two or more dependent income sources.

16. What matters for the return to tertiary education is the additional net wage at tertiary level compared with that at upper-secondary level. This requires the marginal income tax rate of an upper-secondary degree holder to be applied on the gross wage premium (Boarini and Strauss, 2007).

17. For Luxembourg, only net monthly salaries are available. For Sweden, only net annual labour earnings are reported in the ECHP. The variable informing about the individual's activity status and hours worked during the previous year is also missing, so estimations of hourly net wages for Sweden are based on the assumption that individuals worked in every month of the previous year, with the average number of

other variables, which refer to the time of the household interview (employment status; weekly hours worked; type of contract; sector affiliation; tenure in current job; plant size; and occupation). However, the self-employed are excluded from the sample because current monthly wage data are not available.

22. Unlike the ECHP, annual income in the previous year (gross and/or net) is the only available income concept in the CHER dataset, the BHPS, the CNEF, and the CPS, raising the same issue of potential inconsistency between the income variable and the explanatory variables (which refer to the time of the interview). As to Canada, Poland, and the United States, gross hourly earnings are derived from the corresponding annual salaries in the previous year. For two out of the three CHER countries (Hungary and Switzerland), only *net* annual wages and salaries are available at both the household and individual levels, requiring similar corrections as for Luxembourg and Sweden. All in all, gross earnings are available for 17 of the 21 countries. Annual earnings are transformed into hourly earnings by taking into account the number of months worked in the previous year and the number of weekly hours usually worked.[18] For Canada and the United States, the total number of hours worked in the previous year is directly available.

23. An important difference between the ECHP and HILDA data, on the one hand, and BHPS, CHER, CNEF, and CPS, on the other is that *i)* the former may include individuals that were unemployed throughout the previous year, and *ii)* hourly wages derived from CHER are subject to measurement error if the number of hours worked weekly in the previous year differs from that reported at the time of the interview.

24. Individual income data, which are originally reported in national currency units, are converted into purchasing power parity dollars (US$ PPP) of the corresponding year in order to make the mean and standard deviation comparable across countries. Conversion rates are taken from the OECD Economic Outlook database. Several additional restrictions are made to reduce the number of outliers and make the analysis economically more meaningful. First, only employees reporting positive income from dependent employment and for whom work income is the main income source are considered.[19] Second, persons working less than 15 hours per week are ruled out[20] as are those for whom the number of hours worked is missing, making the calculation of the hourly wage impossible. Third, persons are dropped from the sample when they are below the age of 16 or older than 64 as the focus is on the working-age population. Fourth, individuals whose hourly wage is lower than 1 US$ PPP are removed from the sample because

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weekly hours equal to that at the moment of the interview. To the extent that the first part of this assumption is unlikely to hold for every respondent, net hourly wages are likely to be underestimated but the effect on the tertiary wage premium is unclear: The true wage premium will be higher (lower) than the estimated one if months without employment/salary mainly concern tertiary (secondary) degree holders.

18. For Poland, hours worked refer to the number of hours worked in the week preceding the interview as the number of hours usually worked is not available. Also, the calendar of activity only reports the number of months in unemployment without distinguishing between unemployment and inactivity. It is therefore assumed that those currently employed were participating in the labour market throughout the previous year and, hence, that the number of months worked equals twelve minus the number of months in unemployment.

19. The human capital model may be less relevant for working persons with capital as the main income source, since these persons may work for reasons other than income generation.

20. Persons working few hours tend to work in jobs paying less than they could achieve, *e.g.* to stay below a certain income threshold in countries with high marginal tax rates for second-income earners. The fifteen-hour threshold corresponds to the criterion used by the ILO activity status to distinguish between "normally working" and working few hours. As the intention is to use wage premia of today's workers to gauge the profitability of tertiary education for today's students contingent on normal labour market participation, dropping workers with less than 15 hours per week is appropriate based on the assumption that their decision to work few hours is voluntary.

such low incomes probably reflect measurement error. Similarly, upper outliers (above 200 US$ PPP per hour) are also removed from sample.

25. Table 2 shows the sample size and some descriptive statistics of the dependent variable country by country for the year 2001 without distinguishing by gender. The average hourly wage is found to be highest in Switzerland and lowest in Hungary and Poland. The largest wage dispersion is found for the United States, Canada, Hungary and Portugal, while the lowest dispersion is found for Denmark.

[Table 2. Descriptive statistics of gross hourly wage rate for 21 OECD countries, 2001]

26. The country- and gender-specific distribution of gross hourly wages is illustrated in Figure 1 by five income brackets around the country- and gender-specific averages: below 50% of the average wage; 50-85%; 85-115%; 115-150%; 150-200%; and above 200%. Some facts are worth pointing out:

- The largest share of persons (30% or more of the sample) earning more than 115% of the average male wage is found in Germany and Switzerland whereas this share is below 25% in Italy, Portugal, Hungary, and Sweden (see Figure 1, Panel A);

- The highest concentration of men in the central bracket (85-115%) is observed for Sweden and Denmark (more than 35% of the sample), the lowest in Portugal (under 20%);

- The share of men earning less than 85% of the average hourly wage exceeds 50% of the sample in Portugal, Hungary, Spain, Ireland, and the United States; these are also the countries where the share of individuals with an hourly wage exceeding 200% of the average is highest (over 6%), suggesting strongly unequal wage distributions; by contrast, in Denmark, Sweden, and Switzerland less than 40% of the men in the samples remain below this 85%-threshold;

- The share of men with very low hourly wage is highest in the United States (at 26%) while it remains under 5% in Italy, Denmark, Finland, and Belgium.

27. The pattern of gross hourly wages for women broadly supports the above cross-country observations, with differences being somewhat more pronounced for the central and lower wage brackets (see Figure 1, Panel B).

[Figure 1a. Wage equation sample distribution 2001: Gross hourly wage rate of men]

[Figure 1b. Wage equation sample distribution 2001: Gross hourly wage rate of women]

Independent variables

28. The independent variables of the *Mincerian* wage equation used in this study include educational attainment, labour market experience, and control variables for gender, marital status, job tenure, type of work contract, working in the public sector, working part time, plant size, and two dummy variables indicating over- and under-qualification for the current job held, respectively.

Educational attainment

29. The literature distinguishes the time spent in education from the attainment level, with some positive functional relationship existing between the two (de la Fuente and Jimeno, 2005). However, only the level of educational attainment is consistently available for all 21 countries. The degree of detail varies across databases but for the majority of countries a distinction between only three levels is available: *i)* less

than upper secondary education; *ii)* completed upper secondary education/high school; and *iii)* completed higher/tertiary education. Information on fields of study is missing in almost all cases. Albeit somewhat rough, this definition of the empirical attainment variable has the advantage of being internationally comparable because it follows the International Standard Classification of Educational Statistics (ISCED, see OECD, 2004).[21]

30. A shortcoming of the ECHP is that it does not report the number of years it took individuals to reach their attainment levels. Moreover, for France and the Netherlands the attainment variable needs to be corrected for errors in the raw data (variable pt022 in the ECHP).[22, 23] For the CHER countries a variable "years of schooling" exists but lacks cross-sectional variance.[24]

31. By contrast, the number of years of schooling is available for Australia, Canada, the United Kingdom and the United States. For Canada and the United States, there is also a trinomial variable "education with respect to high school" (1 = less than high school; 2 = completed high school; 3 = tertiary-education degree), with information on years of schooling enabling additional consistency checks.[25] However, the situation is different for Australia and the United Kingdom where a much finer classification of attainment levels exists with no straightforward link to either the three-tier classification used in the ECHP and CHER databases or the ISCED levels. A system of correspondence with the dominant three-tier classification is established using the number of years of education of each individual in the datasets but also country-wide institutional information on education systems from OECD (2004). Years of education are also used to estimate the age of labour market entry where it is not directly available.

32. Educational attainment varies widely across countries (Figure 2). Around 45% of the wage-earning population (as defined above) hold a tertiary degree in the 2001 samples for Belgium and the United Kingdom. The share is lower but still above one-third in Finland, the United States, Australia, Spain, Sweden, France, and Denmark. By contrast, tertiary attainment shares among wage earners cluster around 10% in Portugal, Austria, Italy, and Poland. It should be borne in mind that tertiary degree holders are overrepresented among wage earners and persons with less than upper-secondary degree underrepresented because participation is more likely the higher the level of educational attainment

21. The three attainment levels considered correspond to ISCED 0-2, ISCED 3-4 and ISCED 5-6, respectively. At this level of aggregation individual education attainment levels are not affected by the 1997 overhaul of the ISCED system.

22. In the Dutch sample of the ECHP, 97% of the working-age population are reported to have less than upper-secondary education as from 1998. Indeed, all existing respondents and 78% of the first-time respondents are coded this way. As a consequence, all first-time respondents are dropped from the sample as from 1998. Only keeping the remaining 22% of first-time respondents would bias the attainment structure and would lead to an under-representation of persons with lower-secondary attainment. As a consequence of eliminating first-time respondents, the number of observations in the Mincerian regression is bound to fall by some 10% in each cross-section after 1997 (from 3 800 to about 3 350 in 1998, to 3 050 in 1999, to 2 700 in 2000, and to 2 050 in 2001).

23. In the French sample about 200 teenagers are reported to have attained a tertiary degree, which was corrected to upper-secondary. Another issue in the French sample is that the category "still attending education" (supposed to be discontinued as from 1998) continues to be used. The 700 persons concerned are removed from the sample to avoid corrections based on guessing. Furthermore, a number of persons in the 1998 sample were classified at a lower attainment level than in 1997. In this case the 1997 attainment level is restored.

24. The variable is a one-to-one transformation of the attainment level using the usual cumulative length of schooling programmes to reach each attainment level.

25. For example, attainment level "more than high school" is consistent with 14 or more years of schooling (twelve to complete high school and two for the shortest College cycle qualifying for ISCED 5).

(Boarini and Strauss, 2007).[26] Over and above differences in attainment structures, countries also vary in their ability to integrate low-skilled persons into the labour market. As a consequence of both influences, the share of wage earners with low attainment is even more dispersed than that of tertiary attainment, ranging from just over 10% in the United Kingdom to 70% in Portugal. The share of workers with completed upper-secondary education is highest in Austria, Switzerland and Germany, where extensive vocational training exists (so-called "dual system").

[Figure 2. Wage equation sample distribution 2001: Educational attainment]

33. To allow for maximum flexibility in the estimation of wage *premia*, the three attainment levels are translated into two dummy variables for educational attainment. The first, *edu*1, takes a value of one if the individual has not completed upper-secondary education and 0 otherwise. The second, *edu*3, equals one for individuals with a degree from tertiary education and 0 otherwise. Therefore, the reference person, for whom both education dummies equal 0 is the individual with completed upper-secondary education.[27]

Labour market experience

34. Human capital theory discriminates between the productivity and wage effects of formal schooling and those of skills acquired through cumulative work experience. Many empirical studies on returns to education use age (often in a quadratic specification) as a proxy for accumulated labour market experience. While measured precisely, age is an imprecise proxy of the labour market experience, especially for younger cohorts.[28] This is why a measure of labour market experience (*exper*) is used in this study. For all countries, except Australia, where the number of years worked is directly available *exper* is defined as the difference between the current age and the age at labour market entry and, hence, measures potential rather than actual labour market experience. The measurement error relative to the actual labour market experience is expected to be small for men but larger for women. For most countries in the ECHP, the age at labour market entry is available.[29] For Canada, the age of labour market entry is calculated as the reported number of years in education plus six (starting age of compulsory schooling). For the countries in the CHER database, the United States, and the United Kingdom, the number of years in education is computed as the typical age for each attainment level using the information provided in OECD (2004b). Then the age at labour market entry is again set equal to the number of years in education plus the starting age of compulsory schooling.

35. Regarding the cross-country distribution of experience, more than 30% of wage earners in the sample are in the first ten years of their career in Ireland and Greece, compared with only 13% for Germany and Denmark, reflecting huge demographic differences (Figure 3). At the other end of the experience spectrum, there are countries where low legal retirement age and/or the widespread use of early

26. For the complete sample of the 15-64 year-old, both within-country distributions of attainment levels and cross-country differences closely match those from more comprehensive national sources published in Education at a Glance (OECD, 2006).

27. An alternative specification would consist of a single multinomial attainment variable taking the values of 1, 2, and 3 for less-than-upper-secondary, completed upper-secondary, and completed tertiary education respectively. This would restrict the wage increase resulting from an incremental advancement in attainment to be the same in upper-secondary and tertiary education, which is not justified.

28 For example, at age 25 a tertiary degree holder has very little labour market experience while blue collar workers of the same age may have already worked for several years.

29. When the age of labour market entry is not available, as for Luxembourg, Sweden, Hungary, Poland, and Switzerland, the age at the moment of reaching the highest level of education is used. It is either taken directly from the panel data source or computed as the typical "graduation" age for each attainment level in the country.

exit routes from the labour market squeezes the ratio of persons with over 40 years of labour market experience (*e.g.* Belgium, Luxembourg, Greece, Italy, Poland, and France).

36. The *Mincerian* equation (1) uses a linear rather than quadratic specification of *exper*.[30] Furthermore, the final specification does not contain an interaction term between educational attainment and experience because this interaction is not supported by the data.

[Figure 3. Wage equation sample distribution 2001: Labour market experience]

Gender

37. A gender dummy (*woman*) controls for different wage levels between men and women. The representation of women among wage earners working at least 15 hours per week varies widely across countries: while their share roughly corresponds to that in the overall population in Hungary, the United Kingdom, Finland, Denmark and the United States, it is less than 40% in Luxembourg, Spain, and Greece (Figure 4). The gender dummy is interacted with the educational attainment and labour market experience variables to produce gender-specific estimates of those coefficients that enter the calculation of the Internal Rate of Return to tertiary education in the companion paper (Boarini and Strauss, 2007).[31] For the sake of cross-country comparability of specifications, gender is not interacted with other control variables even though there may be statistically different coefficients for men and women, notably with respect to the effect of marriage which tends to be positive for men but negative for women.[32]

[Figure 4. Wage equation sample distribution 2001: Gender]

Marital status

38. Marital status enters the analysis as a dummy variable taking the value 1 if the person is formally married and 0 otherwise. The data allow for alternative definitions of living with a partner but this hardly affects the results.[33] In most countries, more than half of all wage earners are married, with this share reaching three-quarters in Poland (Figure 5). For Sweden, a problem of missing variables reduces the number of observations by about 40%.

[Figure 5. Wage equation sample distribution 2001: Married]

30. The average annual premium could be more closely approximated by the slope of an “experience parabolic function” at mid-career (see de la Fuente and Jimeno, 2005). In principle, this could lead to higher wage premia, however, with decreasing returns on experience mainly taking place at older ages, a calculation based on mid-career worker would not be much affected by this alternative estimate.

31 This is preferred over split male-female regressions because the number of observations would otherwise become fairly small in some cases (below 1 000 individuals). The male-female distinction is in line with the empirical literature on returns to education. It also makes sense for the experience variable in the face of unavailable data on actual experience because women tend to have longer career breaks, implying a lower estimated experience premium for women.

32 F-tests show that the joint hypothesis of the effects of all control variables jointly being the same for men as for women does not hold for any country. However, the set of variables for which the hypothesis holds tends to be a different one for almost every country.

33. Formal marriage entails specific income tax treatment in most European countries and is therefore the preferred proxy in net wage equations.

Job tenure

39. Tenure is calculated as the difference between the year of the interview and that when the person started working with their current employer, plus one.[34] The starting year comes as a discreet variable that is censored in the panel surveys for the majority of countries but with varying "cut-off" years. For instance, in the ECHP, the earliest year reported of starting work with the current employer lies in the interval [1981; 1985] depending on the country. This cut-off year stays the same in all waves, implying that tenure would be censored at a value of ten for some countries in the first wave of the ECHP in 1994. To ensure cross-country comparability in the definition of this variable, the tenure variable is capped at 10 for all persons having worked with their employer for more than nine years. There are two more reasons to rationalise a cap for this variable. First, the acquisition of job-specific human capital can be considered to be exploited after some time, so productivity, if growing at all, will not develop as strongly as in the first years. Second, the censoring introduces a difference between labour market experience and tenure where there would otherwise be none for experienced workers who have never changed employers during their career, thereby reducing the potential for multi-collinearity.[35] The distribution of job tenure in the sample is illustrated in Figure 6. Job tenure is unavailable for Canada, Poland, and the United States. It is dropped from the equation for Luxembourg and Sweden because of missing values for half of the sample.

[Figure 6. Wage equation sample distribution 2001: tenure]

Part-time work

40. The part-time dummy variable equals one for persons working 15-29 hours per week and zero otherwise. The threshold is set deliberately low to make the difference between part-time and full-time meaningful even for countries like France and the Netherlands where the regular work week is shorter than in other countries. Cross-country variation of part-time is substantial, with its share varying from 3% of all wage earners in Portugal to one-quarter in the Netherlands (Figure 7). Unsurprisingly, the share is much higher for women than for men, reaching close to 50% of women employed in the Netherlands.

[Figure 7. Wage equation sample distribution 2001: Part-time indicator]

Type of the employment contract

41. The variable reflecting the type of employment contract, *indef_cont*, equals one for persons holding an indefinite-term contract and zero otherwise. It is directly available from most of the household data sources, with the exceptions of Hungary, Poland and the United States. The share of fixed-term contracts is high in Spain, Australia, Greece and Germany, where employment protection legislation (EPL) on indefinite-term contracts is restrictive, but very low in the United Kingdom (Figure 8). The information is missing for a substantial number of persons in Sweden and Switzerland.[36]

[Figure 8. Wage equation sample distribution 2001: type of contract]

34. Hence, a value of n means persons with this value are in their n-th year with the current employer.

35. Significant pay increases may occur beyond the tenth year in one's working life due to promotions or seniority-based pay scales. These are "picked up" by variable exper.

36. In Sweden, the set of persons with missing information on the nature of the employment contract is almost identical with the set of those with no information on marital status and on belonging to the public versus the private sector (see below), limiting the overall reduction in sample size to about 45%.

Public sector

42. A dummy variable is defined for working in the public sector (=1; 0 else).[37] The information is directly available from a yes-/no question in the ECHP and CHER datasets. According to the country samples, the share of the public sector in employment ranges from under 20% in the United States to slightly over 40% in Poland and Denmark (Figure 9).

[Figure 9. Wage equation sample distribution 2001: Public *versus* private sector]

Plant size

43. Large firms usually pay higher wages than small firms, reflecting either the sharing of profits from market power or higher productivity of their workers, or both. The ideal information to control for this feature - firm size - is not available. A reasonable proxy used in the wage regressions is the number of persons usually working at the respondent's local production unit (*plant_size*). In principle, it is available in all panel databases except the CNEF (Canada), France, Hungary and Poland. For the 17 remaining countries the variable is provided in a discreet, multinomial form with a limited number of plant-size classes: three in the CHER data and seven in the ECHP other than Germany.[38]

44. To make the information comparable across countries the variable is made continuous by assigning each person a random plant size within the limits indicated by the realisation of the discreet variable, assuming uniform distribution.[39] Finally, the natural logarithm of the random plant size is taken. Given the way the variable is constructed, caution is warranted when interpreting cross-country differences in plant-size effects on wages.[40]

Over- and under-qualification in current job

45. Finally, the regression controls for the fact that hourly wages could reflect occupational rather than educational attainment. The available data would permit controlling for occupation but it is strongly correlated with educational attainment, raising a problem of multi-collinearity. The strategy pursued here indirectly takes the occupational status of individuals into account. For example, university graduates working in jobs regularly accessible for high-school degree holders are considered as being over-qualified. Conversely, individuals working in occupations "more qualified" than those normally accessible to their attainment level are considered as being under-qualified.

46. To assess whether persons have excessive, adequate, or deficient formal education for a job, their occupational levels are confronted with their educational attainment levels.[41] The attainment distribution is calculated for each occupation[42] in order to determine the most frequent attainment level for the occupation

37 A value of 1 does not necessarily imply that the person has the status of a civil servant.

38. For Germany, the size classes are "none", [1;4], [5;19]; [20;199]; [200;1999]; and "2000 and more". For the other ECHP countries, they are "none", [1;4], [5;19]; [20;49]; [50;99], [100;499]; and "500 and more".

39. For example, persons in the ECHP other than Germany whose answer is coded "4" are randomly assigned an integer value from 20 to 49, with each number being as likely as any other.

40. An estimated coefficient of 0.05 for the variable plant_size means that a person working in a production unit with 200 persons earns 5% more on average than one working at a plant with 100 staff.

41. Dumont (2005) discusses the pros and cons of alternative assessment methods for over-qualification.

42. The international standard classification of occupations (ISCO) has eight broad ("one-digit") categories: 1 – legislators, senior officials, and managers; 2 – professionals; 3 – technicians and associate professionals; 4 – clerks; 5 – service workers and shop and market sales workers; 6 – skilled agricultural

(the mode). Individuals with an attainment level above (below) the mode are considered as being over-qualified (under-qualified) for their current job.[43] The occupation-attainment matrix is calculated separately for each country to account for the diversity of national education and training systems.[44]

47. The problem with this simple approach is that it leads to an implausibly high number of occupation-attainment mismatches. In fact, for some occupations a large share of upper-secondary degree holders co-exists with a large share of persons at an adjacent attainment level, *e.g.* older workers with high school degrees coexisting with younger colleagues holding tertiary degrees. To reduce this problem, the following rule is applied: For a given occupation, any attainment level other than the mode is also accepted as being adequate when the share of persons belonging to this other attainment level is less than 10 percentage points smaller than the mode. With this modified definition of "adequate education level" in mind the definition of the dummy variables for inadequate qualification becomes:

- *Overqualif = 1* if an individual's attainment level exceeds the adequate attainment level for the occupation (or the higher adequate attainment level in case there are two) and *Overqualif = 0* otherwise;

- *Underqualif = 1* if an individual's attainment level is lower than the adequate attainment level for the occupation (or the lower adequate attainment level in case there are two) and *Underqualif = 0* otherwise.

48. The over- and under-qualification patterns show an incidence of over-qualification of 12% on average across countries, ranging from only 5% in Finland and Belgium to 20% in Greece (Figure 10). The share of persons considered as under-qualified lies in a similar range. It is lowest in Portugal and Poland – countries having low average attainment – with only 3%, and highest in Denmark, France, and the Netherlands. At 37%, the latter two countries also have the highest proportion of wage earners whose attainment does not match the usual education requirement of their occupations according to the above definition (sum of shares of the over-qualified and the under-qualified), compared with only 14% in Portugal.

[Figure 10. Wage equation sample distribution 2001: Over- or under-qualified for current occupation]

and fishery workers; 7 – craft and related trades workers; 8 – Plant and machine operators and assemblers; 9 – elementary occupations; 0 – military. Occupational information is available on the "two-digit" level, hence providing a further breakdown of the broad categories (two to four occupational families per category).

43. Managers of small enterprises are not considered because occupational requirements are very heterogeneous. Persons with missing information on occupational status are assumed to be adequately educated.

44. For Germany, results are found to be sensitive to using a national occupation-attainment matrix versus an EU-15 matrix. With a nationally-defined matrix the tertiary wage premium is roughly 10 percentage points higher than in the alternative approach. The likely reason is that in Germany a number of occupations, for which a tertiary degree is customary in most EU countries, do not require tertiary education. Persons in these occupations would thus be labelled under-qualified under the "EU" definition and adequately qualified under the national definition. Hence, part of the wage differential between tertiary and upper-secondary degree holders would be explained by the variable underqualif (which has a positive sign in the regressions, see Section 5 below) under the EU definition, leaving a smaller part of the differential to be accounted for by *edu3*, the tertiary-education dummy.

Expected sign of coefficients

49. An unambiguously positive effect on the hourly wage of individuals is expected for the coefficients of the following variables:

- Completed Tertiary education (*edu*3);
- Labour market experience (*exper*);
- Job tenure (*tenure*);
- Indefinite-term employment contract (*indef_cont*);
- Plant size [*Log (plant_size)*];
- Being under-qualified in current job (*underqualif*).

An unambiguously negative sign is expected for the following variables:

- Less than completed upper-secondary education (*edu*1);
- Being a woman (*woman*);
- Being over-qualified in current job (*overqualif*).

50. The sign of the remaining independent variables (*married*, *public*, and *part_time*) may be ambiguous. Being married tends to boost male wages but harm those of females. Working in the public sector should, on the one hand, imply lower gross hourly wages as the price for greater job security in a competitive overall labour market. But, on the other hand, as the public sector is itself sheltered from competitive pressures, employees may manage to negotiate wages above market rates and set up a queuing system to deal with the resulting excess demand for public-sector jobs. Finally, the net effect on hourly wages of working part-time is not clear either. It is true that working shorter hours may slow down the accumulation of job-specific and general skills and delay promotions, leading to the expectation of a negative *part_time* coefficient. At the same time, however, the sample of full-timers might be more likely than part-timers to accumulate unpaid overtime in their main job, depressing their average wage. In addition, progressive taxation could mean a positive coefficient of *part_time* in countries for which only the *net* hourly wage is available (Hungary, Luxembourg, Sweden, and Switzerland).

51. The gender experience interaction term *exper·woman* is expected to be negative because *i)* women tend to have longer and more frequent career breaks and *exper* measures potential rather than actual experience; and *ii)* women are more likely to work part-time,[45] further slowing down advancement through promotion and extra pay increases. As to the gender attainment interaction, one may expect the gender wage gap to be stronger at lower than at higher levels of the education and occupation ladders, resulting in a negative sign of *edu*1·*woman*.[46] The same reasoning should ensure a positive sign of

45 Preliminary regressions on split country samples drawn from ECHP data revealed strongly positive wage effects of working part-time for men but weaker or even significantly negative effects for women.

46 One of the reasons for this is that men and women are unequally spread over the sectors of the economy. If capital endowment per worker tends to be higher in "typically male" sectors (*e.g.* car manufacturing) than in "typically female" sectors (*e.g.* nursing), so might productivity and wages in these sectors. The Mincerian equation does not control for industry affiliation to avoid multicolinearity.

*edu*3·*woman* but the conspicuous under-representation of women in higher ranks of the hierarchy makes this outcome more uncertain.

5. Results

52. For each country and available year, a cross-sectional OLS regression of the *Mincerian* wage equation described in (1) is run. Standard errors are robust, *i.e.* corrected for outliers.[47] The results for 2001, the year with the maximum number (18) of countries available at a time are shown in Table 3. The lines in bold pertain to the wage effect of tertiary education, with the upper bold line representing the wage premium for men and the sum of the upper and lower lines that for women. The same kind of addition of the interacted and the non-interacted coefficients is required to obtain the average female wage "penalty" of not having completed upper-secondary education (*edu*1) and women's average annual wage increment due to labour market experience (*exper*).

[Table 3. Results of the *Mincerian* wage regressions for 21 OECD countries, 2001]

53. In the 21 regressions for the year 2001 (1997 for Hungary; 2000 for Poland and Switzerland) over 95% of all coefficients are significant, virtually all of them at the 1%-level. Moreover, the sign of all non-interacted coefficients is in line with expectations (see end of Section 4).

54. Most studies take the schooling coefficient of the log-wage equation as an approximation of the wage premium associated with tertiary education. This implicitly assumes that $ln(1+x) \approx x$ for small x. This approximation is unproblematic when the right-hand-side variable is the log of a continuous variable, which allows interpreting the coefficient as elasticity. It is not an issue either for a discreet right-hand-side variable that can be changed in relatively small increments such as age, experience or even years of schooling since this usually implies small coefficients in the regressions.

55. In the case at hand, however, the educational attainment variable of interest (*edu*3) is a binary variable and the change from 0 to 1 represents a major step. Correspondingly, the estimated effect on log wages is substantial – between 0.23 and 0.65 (see Table 3) – making the logarithmic approximation unsatisfactory. This is why the effects of *edu*3 on the log of hourly wage, α_2 for men and $(\alpha_2 + \alpha_4)$ for women, are transformed into precise tertiary wage *premia* using the following formulae:

- Male wage premium $= \left[\exp(\alpha_2) - 1\right] \cdot 100\%$; and
- Female wage premium $= \left[\exp(\alpha_2 + \alpha_4) - 1\right] \cdot 100\%$.

56. Applying this interpretation to the coefficients of 2001, the tertiary education wage premium for men is highest in the United States (92%) and lowest in Spain (27%). For women, wage *premia* are highest in Portugal at 92% and lowest in Sweden at 24%[48] (Table 4). Women's tertiary wage *premia* are higher (positive interaction coefficient) than men's in 9 of the 21 countries but differences appear to be significant only for Greece, Poland, Portugal, and Spain (Figure 11). By contrast, male graduates appear to yield significantly higher wage returns than their female counterparts in Austria, Finland, and Italy.

[Table 4. Gross wage *premia* on tertiary education for men and women in 21 OECD countries, 1991-2005]

47 Using a robust regression technique is not deemed necessary as extreme values for hourly wages have been removed by applying lower and upper bounds ($1 and $200, respectively).

48 However, estimations for Sweden are based on net wages. When correcting for the income taxes, the wage premium is lowest in Austria, with 33%.

[Figure 11. Male-female differences in tertiary-education coefficients]

57. Over time, tertiary wage *premia* are found to be fairly stable (see Table 4). Moreover, wage *premia* on tertiary education tend to increase in Denmark, Ireland, and the United States (Figure 12).

[Figure 12. Evolution of gross wage *premia* for selected countries]

58. In 2001, not having completed upper-secondary education affected log wages very differently, ranging from –0.13 in France to –0.65 in the United States. This implies upper-secondary wage *premia* between 14% and 92% of the average wage of persons without complete upper-secondary education (Table 5). *Premia* appear to be substantially higher for women than for men in Canada and France but lower in the Netherlands and in Switzerland. Over and above the substantial cross-country variation, upper-secondary wage *premia* are subject to stronger fluctuations over time. The coefficient of variation averages 0.20 for the 42 country-gender pairs, which is 1½ times that for tertiary education. Fluctuations are particularly pronounced in Austria and Finland. The greater stability of returns to education is an important additional advantage for tertiary degree holders because they are less exposed to business cycle shocks than lower-educated persons.

[Table 5. Gross wage *premia* on upper-secondary education for men and women in 21 OECD countries, 1991-2005]

59. Concerning the variables other than educational attainment, the following points are worth noting with reference to 2001 estimates:[49]

- Skill accumulation is rewarded but the relative importance of general labour-market relative to job-specific skills varies across countries:
  - The experience premium ranges from 0.23% *per annum* in Germany to 1.69% in Switzerland, appears to be lower for women than for men (except for Poland and Portugal), and turns out to be fairly stable over time (Table 6);[50]
  - the effect of an additional year of job tenure (0.3% to 3.1%) tends to be negatively correlated with the experience premium;
- The estimated gender pay gap (all education levels) averages 15% in 2001 and is highest in Poland (36% of the male wage) and lowest in Sweden (5%);
- Married persons tend to earn significantly more than unmarried persons in 17 countries (up to 23% in Poland) but not in Belgium, Finland, Hungary, and Switzerland;
- Working for the public sector entails positive wage effects in the majority of countries (with the premium exceeding 20% in Canada, Luxembourg, and Portugal) but a penalty in the Nordic countries and the United States;

49 Just as for the percentage effect on wages of completing tertiary education, the wage effects from a 0-1 change in any dummy variable β reported in this paragraph are obtained using $[\exp(\beta)-1]*100\%$.

50 The cross-period average of the coefficient of variation for the 41 estimated country-gender pairs of experience coefficients is 0.19 (excluding the insignificant results for German women). Assuming normal distribution, this means that in a country with an average experience-related annual wage increase of 1% and average volatility, the increase lies between 0.6% and 1.4% in 95% of all periods.

- As expected, the wage effect of working part-time is ambiguous: in the majority of countries it is positive (by about 30% in Greece and Italy) but tends to be negative in the English-speaking countries (nearly -20% in the United States);
- An indefinite-term contract improves a worker's wage by 6% to 84%;
- A person working in a plant twice the size of another person's plant earns between 2% (Netherlands) and 6% (Germany) more than this other person, all other things being equal;
- Being over-qualified reduces the hourly pay by between 12% (Switzerland) and 37% (United States) of the upper-secondary degree holder's wage, whereas being under-qualified raises wages by 9% to 43% compared to persons with the same attainment level but working in lower occupations more in line with their formal education; the point estimators suggest that on average, *i)* working in "too low" an occupation does not fully take away the education wage premium; and *ii)* making it to "too high" an occupation does not fully substitute for education.

[Table 6: Annual gross wage premium on labour market experience for men and women in 21 OECD countries, 1991-2005]

The gross hourly wage premium per annum of tertiary education

60. Two adjustments are made for the results to be fully comparable across countries. First, a correction is required to assess the gross wage premium for the four countries for which only net wages are available. Second, all gross wage *premia* upon completion of tertiary education are transformed into wage *premia per annum of tertiary education* to account for cross-country differences in the duration of tertiary studies.

61. The correction of net attainment *premia* follows de la Fuente and Jimeno (2005). The average income tax rate t of the average earner in 2001 is taken from OECD (2005a). It equals 33.3% for Hungary, 27.8% for Luxembourg, 32.4% for Sweden, and 22% for Switzerland. Then the precise wage *premia* as derived from the estimated *edu*3 coefficient in the log net wage equations are divided by $(1 – t)$ to obtain gross tertiary wage *premia*. This brings Hungary to the top of the country ranking. Moreover, Sweden is no longer at the bottom.

62. To express the results as gross wage *premia per annum* of tertiary education, the country-specific average tertiary study duration d is taken from Table B1.3b of OECD (2005b) and applied to the precise wage *premia* derived from the *Mincerian* estimates.[51] This is done by taking (1+wage premium) to the power of $(1/d)$,[52] *i.e.* assuming a constant percentage increase in the hourly wage for each year of tertiary education. Figure 13 summarises the results for 2001, illustrating both the attainment-specific wage *premia* and the wage *premia per annum* of tertiary education. Note that it is these percentage wage *premia per*

51 Missing duration data for six countries (Belgium, Canada, Luxembourg, Poland, Portugal, and the United States) are replaced with the simple OECD country mean (4.21 years). For six of the other 15 countries, study duration refers to the year 2001/02, for the others to 1994/95.

52 An alternative would consist in taking the regression coefficient of *edu3* and divide it by the duration of tertiary studies. This would, however, lead to slightly under-estimating the true wage premium. For example, take a country with a coefficient of *edu3* equal to 0.43 (corresponding to a wage premium on tertiary attainment of 53.7%) and average duration of tertiary education of 5½ years. The correct wage premium *per annum* of education equals 8.1% whereas the approximation would yield only 7.8% (= 0.43/5.5).

annum of education (shown in Figure 13) that enter the calculation of the private internal rates of return to tertiary education in Boarini and Strauss (2007) along with the experience *premia* shown in Table 6.[53]

[Figure 13. Gross wage *premia*]

63. The country average of the gross hourly wage premium *per annum* is 10.6% for men and 11% for women. As mentioned above, there are nine countries for which tertiary wage *premia* for women exceed those for men and twelve countries where the opposite is true. At 10% for each gender, the median is lower than the average, implying a skewed country distribution with a majority of countries below the average. The median countries are Finland for men and France for women. Wage *premia* are comprised between 5½% to 6% (men in Greece and Spain, women in Austria and Italy) and 16% to 18% in Hungary and the United States (for both men and women) and for women in Ireland and Portugal. Women in Poland and the United Kingdom belong to an extended group of top performers with *premia* above 15%.

64. Apart from the top and the bottom of the country distribution, the intermediate gross hourly wage *premia per annum* of tertiary education for men appear to fall into three country groups. The first group with *premia* distinctly lower than the median includes Austria, Belgium, Germany, Italy, the Netherlands, Poland, and Sweden. The second group (Canada, Denmark, Finland, and France) has *premia* at 10%. The remaining countries (third group) outperform both the median and the average. When turning to the country distribution of female wage *premia per annum* of tertiary education, the intermediate countries fall into two groups, one with median and higher wage *premia* comprising Australia, Canada, France, Luxembourg, and Switzerland, the other with *premia* from 7% to 9% comprising the remaining eight countries.

65. Controlling for the duration of tertiary studies significantly changes the position of some countries in the ranking. Australia and Ireland, where studies tend to be shorter than the OECD average, are now among those with the highest *premia*. Switzerland and the United Kingdom also improve their relative position. At the same time, countries characterised by long study duration such as Austria, Germany, Greece and Italy, fall further back. The same is true, albeit to a lesser extent, for France and the Netherlands where the average study duration is about half a year longer than the OECD average. The Pearson rank correlation between study duration and the wage premium *per annum* of tertiary education is strongly negative (–0.70 for men and –0.65 for women), possibly suggesting decreasing returns to additional years of tertiary education beyond the first higher-education degree. Countries with long average study duration even fail to produce higher tertiary attainment *premia* (not controlling for duration) than those with shorter programmes, with the coefficient of rank correlation between the 2001 tertiary attainment *premia* (see Table 4) and study duration being insignificant at best (–0.20 for men and –0.26 for women). These results strongly suggest that countries with long study duration may have scope for strengthening the overall incentive to invest in tertiary human capital through curricular reform, *e.g.* by streamlining and better co-ordinating study programmes, reducing slack in student timetables, and strengthening incentives for studying faster alongside "penalties" on studying longer (staggered tuition fees).[54]

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53 Tertiary wage premia *per annum* of education other than for 2001 are not reported here since study duration data are time-invariant, implying a stable relationship over time for each country between the wage premia (see Table 4) and the wage premia *per annum*. Duration data are also gender-invariant, leaving the gender ranking within countries shown in Figure 11 unaffected when switching from tertiary attainment premia to premia *per annum* of tertiary education.

54 Further reasons for the zero or negative correlation between gross wage premia and study duration include labour and product market regulation as well as feedback effects on the wage premium from the scarcity of tertiary- relative to upper-secondary human capital among the stock of existing workers (see Boarini *et al.*, 2007).

Comparison with other estimates in the literature

66. Given the vast amount of country-specific empirical studies, the focus here is on a limited number of empirical studies that have attempted to yield comparable results across countries through the use of cross-country data sources and a unified framework of sample selection and econometric specification.[55]

67. Psacharopolos (1994) and Psacharopoulos and Patrinos (2004) have the broadest country coverage. Their results are not directly comparable with those of this study because where they present university-specific results these pertain to returns to education rather than wage *premia* and mostly refer to sample periods prior to those covered in this study. However, they also present results from *Mincerian* wage equations that deliberately exclude additional variables over and above years of schooling (all levels) and labour market experience. The schooling coefficients average 0.072 for the 16 countries for which the year reported (early 1990s to mid-1990s) is not too far from the results reported here, compared with 0.100 for our results (gender-country average of *edu*3 coefficients of 1996 or closest available year, divided by 4.21 years, the OECD average duration of tertiary studies).[56]

68. The Mincerian years-of-schooling coefficients (all educational levels) based on data of the mid-1990s collected in Asplund and Pereira (1999) and also reported in Harmon *et al.* (2003, Table 2) average 0.075 for men and 0.083 for women (specification using potential experience) for the 14 countries that their and our samples have in common. This compares with a somewhat higher 0.087 in this study (gender-country average of *edu*3 coefficients of 1996 or closest available year, divided by 4.6 years, the average study duration in the relevant country group).[57]

69. Blöndal *et al.* (2002) compute private internal rates of return to tertiary education at the end of the 1990s for ten countries, eight of which are also in the country sample reported here.[58] Methodologically, their "narrow rate" comes closest to the wage premium *per annum* of tertiary education reported in Figure 13. Their average gross wage *premia per annum* of education for this group of eight countries are11.9% for men and 11% for women and compare to our 2001 average premium of 10.5% for each gender. One might have expected larger differences given the marked differences in data sources, methodological approach (annual rather than hourly earnings; returns not estimated by regression but taken from gender-age-specific ratios of average earnings of tertiary degree holders relative to those of upper-secondary degree holders), and the lack of labour market control variables.

70. De la Fuente and Jimeno (2005) use data from labour-force rather than household surveys, a quadratic specification of potential experience, and a smaller set of control variable than is used in this paper. The gross wage *premia per annum* of education for the EU-15 countries except Luxembourg contain an ad-hoc correction factor of 0.9 accounting for the likely net (upward) endogeneity bias inspired from Card (1999). Their uncorrected OLS estimate averages 0.08, comparable with our 2001 estimate of

55 Country-specific studies can exploit different micro data sources that are not comparable with the survey data used in this study. An illustrative case in point is Ciccone *et al.* (2004) who report a net hourly wage premium of 9% for Italy, in contrast with our finding of 7% for the gross wage premium.

56 See TableA2 in Psacharopoulos and Patrinos (2004). These countries are Australia, Austria, Canada, Denmark, Finland, Germany, Greece, Hungary, Netherlands, Poland, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States. Among these countries, returns to university education tend to be higher than those to secondary education where separate results are available.

57. These countries are: Austria, Denmark, (West) Germany, Netherlands, Portugal, Sweden, France, the United Kingdom, Ireland, Italy, Finland, Spain, Switzerland, and Greece.

58. United States, Germany, France, United Kingdom, Canada, Denmark, Netherlands, and Sweden

0.085 (gender-country average of *edu*3 coefficients, divided by 4.7 years, the average study duration in the relevant EU-14 country group).

71. Heinrich and Hildebrand (2006) present *Mincerian* coefficients and private returns to education for 15 EU countries based on the 1996 wave of the ECHP. In the specification not controlling for the level of schooling (assuming constant returns to every year of education), they obtain a gross wage premium *per annum* of schooling of slightly under 0.07 for both men and women, somewhat below our results (0.082).[59] The difference possibly stems from the fact that one year of university education yields a higher return than one year of secondary education. Heinrich and Hildebrand (2006) find evidence for this hypothesis in a more sophisticated specification controlling for four different attainment levels (completed lower-secondary, upper-secondary, and tertiary, with primary education being the reference level of attainment).

72. Summing up, this short overview suggests that the results presented here are broadly in line with earlier studies using similar data sources, methodology and time periods.

6. Conclusion

73. The gross hourly wage premium is the single most important driver of private returns to tertiary education. This paper has presented cross-section estimations based on a unified framework for 21 OECD countries from the 1990s to the early 2000s using international (and a few national) household surveys to maximise international comparability. One of the main advantages of the estimates presented here have been the use of a richer set of control variables and the extension of a single framework to a larger number of OECD countries than had usually been the case. The results of the "augmented" *Mincerian* wage equations point to an average gross hourly wage premium on completed tertiary education of 55% in 2001 (country-gender average), translating into a premium of almost 11% *per annum* of tertiary education. Wage *premia* display little variation over time but huge cross-country variation, ranging from 27% for men in Spain to 90% for Hungary and the United States. At 6 %, the premium *per annum* of tertiary education is lowest in Greece and Spain while reaching 14%-18% in most Anglo-Saxon countries, in Portugal, and in Hungary.

59 The 1996 country-gender average *edu3* coefficient for the EU-15 without Sweden (no ECHP data in 1996) and the United Kingdom (for which this study does not use ECHP data) –broken down to one year of tertiary education by dividing by 4.8, the average study duration in EU-13– is 0.0395/4.8 = 0.082.

ANNEX 1: CORRELATION PATTERN AMONG RIGHT-HAND-SIDE VARIABLES

74. One of the conditions for the standard OLS model to deliver BLUE (best linear unbiased estimates) of the underlying economic relationships is that right-hand side variables be uncorrelated with each other. The strategy chosen in this study was to control for many influences on the average wage rate that, when not controlled for, might attribute a seeming return (or lack thereof) to tertiary education. The addition of a large number of control variables obviously comes at the risk of adding variables that are not completely independent from each other (multi-collinearity). This risk cannot be dismissed in the case at hand, as shown by the bolded figures in Table A1.1 (denoting significance at the 1% level of pair wise correlation coefficients). To keep the number of rows and columns limited, *edu*1 and *edu*3 are summarised into a single variable *attain* that equals 1 for less-than upper secondary education; 2 for completed upper-secondary education and 3 for completed tertiary education.

75. Significant correlations with the attainment variable matter most in the context of this study. In this respect, some countries are nearly free of correlation with control variables (Belgium, Germany, Luxembourg) whereas for others attainment is correlated with virtually all other right-hand side variables (*e.g.* Greece, Ireland, and Italy).

76. The positive correlation with *overqualif* and the negative correlation with *underqualif* are to some extent unavoidable because the risk of over-qualification (under-qualification) increases (decreases) with educational attainment.

77. There is also significantly negative correlation between attainment and experience, reflecting the secular rise of tertiary graduation shares. Austria and Germany are notable exceptions to this pattern.

78. Moreover, in many countries there is a significant, albeit small, positive correlation between the attainment level and the gender dummy, reflecting that women are increasingly outnumbering men among tertiary graduates after having caught up from lower attainment levels. As one can see, this trend, which is well-known for younger cohorts of graduates is already visible in the 2001 *stock* of wage earners.

79. As for the other bilateral correlation coefficients, the most regular features are the positive links between *married* and *exper* (reflecting that young persons tend to be unmarried); between *tenure* and *indef_cont*; and between *exper* and *tenure*. The latter is more worrisome because of the strength of the correlation and because the economic measurement purposes are close to each other: both variables measure wage gains from accumulating experience, general in one case, job-specific in the other. To some extent, the issue has been addressed by capping *tenure* at a value of 10.

80. The remaining significant correlation coefficients are either very small in size or are not observed as a regular pattern for a majority of countries, leaving enough room for every single control variable to unfold its full explanatory potential.

[Table A1.1: Correlogrammes of independent variables for 20 countries, 2001]

ANNEX 2: ASSESSMENT OF THE POTENTIAL EMPLOYMENT SELECTION BIAS IN THE *MINCERIAN* WAGE REGRESSIONS

81. This Annex discusses conditional and unconditional marginal effects of tertiary education on gross hourly earnings and finds that the *Mincerian* specification used in this study yields very close approximations of the former but not necessarily of the latter. As this is mainly an illustrative exercise, it is confined to the largest dataset (ECHP) covering 14 of 21 countries.

82. As mentioned at the end of Section 3, the Mincer coefficient of tertiary education may be biased if the selection into employment is non-random, *i.e.* depends itself on tertiary education. For virtually all country-gender pairs the employment share among tertiary degree holders is higher than among upper-secondary degree holders. If this is because tertiary education has a positive effect on employment, then a degree has a stronger effect on average hourly earnings of the overall working-age population (*unconditional* marginal effect) than on average hourly earnings of employed persons only (*conditional* marginal effect), the wage of persons not in employment being zero. Since the Mincer equation samples contain only persons in employment, they do not allow prediction of the unconditional effect of schooling on earnings. But this is not a concern here because this study serves as an input to the calculation of returns to education in a framework that estimates the probability of employment and the resulting "employability premium" separately (Boarini and Strauss, 2007).

83. What matters here is whether the *Mincerian* equation yields a satisfactory approximation of the *conditional* marginal effect. This is checked in several steps by *i)* jointly estimating the log of hourly gross wages and the probability of employment using the Heckman (1980) two-stage procedure; *ii)* deriving the conditional marginal effect from the regression results, following the approach of Hoffmann and Kassouf (2005);[60] and *iii)* by comparing this effect with the Mincer coefficients of *edu*3.

84. Recall, however, that for reasons outlined in the main text, the baseline wage equation sample excludes a large number of persons. As a consequence, the set of persons not selected is extremely heterogeneous as it contains those working less than 15 hours per week, normally working persons with missing values for at least one control variable, the self-employed, the unemployed, and persons not participating in the labour market. It is impossible to estimate the probability of belonging to such a group with the employment selection models available in the literature. Thus, to create a proper basis for comparison, the *Mincerian* wage regressions have to be re-run on samples including (to the extent possible) all persons with positive labour earnings. These samples are identical with those in Heckman wage equations that include persons in employment (*i.e.* labour earnings observed and positive) but exclude persons not in employment (earnings not observed). Another difference from the specification in

60 In their discussion of the literature on wage equations controlling for participation, Hoffmann and Kassouf (2005) illustrate how most studies stop short of deriving the conditional marginal effect, sometimes in the belief that the latter is given by the schooling coefficient in the Heckman wage equation. They set up a participation model and a wage equation and derive the correction term to be added to the schooling coefficient of the wage equation in Heckman's two-stage procedure. Finally, they apply the correction to a dataset of Brazilian women and find that the difference between the simple Mincerian schooling coefficient and the schooling coefficient in the Heckman wage equation disappears once the latter is "translated" into the conditional marginal effect.

the main text is that the Heckman procedure and the large-sample Mincer equations are estimated separately for men and women given the presumption that the selection bias matters more for women than for men. Furthermore, variable *married* is dropped from the wage equations but kept in the Heckman employment selection equation to satisfy the identifying condition that the selection equation must contain at least one variable that is not in the wage equation.

85. The enlarged wage-equation sample[61] clearly outnumbers the baseline sample (Table A2.1, last three columns). Nevertheless, the large-sample Mincer equation produces estimates of *edu*3 coefficients that come close to the baseline estimates in two-thirds of the country/gender pairs (see Table A2.1, fourth and fifth columns). Large-sample coefficients differ from the baseline by more than 10% of the baseline coefficients for Austria, Italy and Sweden (both sexes); and for women in Denmark, Germany, and Spain. In these cases, large sample estimates tend to be lower than the baseline (apart from Germany and Sweden).[62]

86. To obtain the conditional marginal effect, the Heckman procedure is run, using at its first stage a probit model of employment probability containing an intercept, *edu*1, *edu*3, age, age squared, and *married*.[63] The two-stage procedure delivers tertiary education coefficients in the wage equation that are lower than the large-sample *Mincerian* estimates (see first column of Table A2.1). The adequate correction term to be added to these coefficients in the case at hand (discrete right-hand-side variable *edu*3), consists of the product of the following two elements (see Hoffmann and Kassouf, 2005, equation (9)): the difference in the odds ratios of non-selection between the representative tertiary- and the representative upper-secondary degree holder on the one hand,[64] and the "selection effect"[65] on the other. The initial element is negative in all 28 cases as expected given the positive (negative) effect of tertiary education on the probability of employment (non-employment). The selection effect turns out to be negative too owing

61 The selection criteria for the large sample are "being employed" and reporting "positive wage". A binary variable is constructed and equals 1 if ECHP variable pe003 (ILO employment status) equals 1 or 2 (working respectively more and less than 15 hours) or if it is missing but the person reports being self-employed (variable pe001 = 4). Helping family members without own income are dropped from both samples (wage equation and employment selection model) so as to ensure that employed = 1 coincides with positive labour earnings. As in the baseline, observations with no information on hours worked are eliminated as are persons with very low hourly earnings (with the threshold being lowered to PPP$ 0.50). By contrast, missing values for control variables are replaced with the country average of non-missing values, which changes some of the binomial (dummy) variables into trinomial variables (*married*, *indef_cont*, *public*). For *overqualif* and *underqualif*, missing values are set equal to 0. Since net annual income of the previous year is the only labour income variable available for the self-employed, labour earnings are brought to a gross basis using the average tax rate on average income (OECD Taxing Wages) uniformly, and to a monthly basis using the individual calendar of labour market activity for the previous year (assuming participation throughout the year in case of missing information).

62 However, a more complete comparison between the large-sample Mincerian tertiary-education coefficients and the baseline – abstracting from statistical significance considerations – shows that the former are higher than the latter in 15 out of 28 cases, suggesting that persons with few weekly hours and the self-employed have average tertiary-education premia on hourly earnings comparable with those of persons normally working in dependent employment. Hence, the omission of persons working few hours does not lead to systematic over-estimation of returns to education.

63 See Boarini and Strauss (2007) for a more formal exposition of the Heckman procedure.

64 In predicting the odds ratios of non-selection only prime-age individuals are considered to prevent non-employment from being driven by tertiary education attendance (below age 25) and early retirement (above 54).

65 The selection effect is the correlation coefficient of the residuals from the two Heckman equations, multiplied with the standard error of the Heckman wage equation.

to a negative correlation between the residuals of the selection equation and those of the wage equation. As a consequence, the correction term is positive (second column of Table A2.1). It is larger for women than for men, with highest values observed for Austria, Greece and Luxembourg (0.15, 0.13 and 0.11 respectively).

87. The resulting conditional marginal effect of tertiary education on the log of gross hourly earnings, shown in the third column of Table A2.1, is almost identical to the large-sample Mincer coefficient. The difference between the two exceeds 0.02 only for women in four countries: Luxembourg, Sweden, Finland, and Austria (by decreasing order of magnitude). Hence, based on comparable samples, the *Mincerian* wage regression produces consistent estimates of the conditional marginal effect of tertiary education on hourly earnings.[66] [67]

[Table A2.1: Single-equation and bias-corrected tertiary gross wage premia and the conditional marginal effect}

66 The null hypothesis of the conditional marginal effect being equal to the Mincerian coefficient of *edu3* cannot be rejected for any of the 28 country-gender pairs at the 5% significance level.

67 The unconditional marginal effect (not shown) is higher than the conditional one if the tertiary-education coefficient in the employment selection equation is significantly positive. As expected, this is the case for the 28 country-gender pairs analysed here.

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Table 1. Micro data bases and sample size

	Panel data base [1]	Original national source [1]	Number of waves used	Starting year	Latest available year	Number of individuals in 2001	Size of basic sample[2] in 2001[3] Mincerian wage equations
Australia	HILDA	HILDA	3	2001	2003	19914	5211
Austria	ECHP	ECHP	7	1995	2001	5605	2262
Belgium	ECHP	ECHP	8	1994	2001	4299	1896
Canada [4]	CNEF	SLID	10	1993	2002	..	25555
Denmark	ECHP	ECHP	8	1994	2001	3789	2098
Finland	ECHP	ECHP	6	1996	2001	5637	2513
France	ECHP	ECHP	8	1994	2001	10119	3892
Germany	ECHP	GSOEP	8	1994	2001	10624	5003
Greece	ECHP	ECHP	8	1994	2001	9419	2287
Hungary	CHER	HHS, HHBS	6	1992	1997	3626	889
Ireland	ECHP	ECHP	8	1994	2001	4022	1557
Italy	ECHP	ECHP	8	1994	2001	13392	4174
Luxembourg	ECHP	PSELL	7	1995	2001	4916	2356
Netherlands	ECHP	ECHP	8	1994	2001	8608	2670
Poland	CHER	HBS	4	1997	2000	7747	2286
Portugal	ECHP	ECHP	8	1994	2001	10915	4146
Spain	ECHP	ECHP	8	1994	2001	11964	3939
Sweden	ECHP	NSLC	5	1997	2001	9291	4551
Switzerland	CHER	SHP	2	1999	2000	6835	2988
United Kingdom	BHPS	BHPS	14	1991	2004	18867	8078
United States	CPS	CPS	12	1994	2005	128821	49592

1. The sources are:

HILDA: Household, Income and Labour Dynamics in Australia

ECHP: European Community Household Panel

CNEF: Cross-National Equivalent File

SLID: Survey of Labour and Income Dynamics

GSOEP German Socio-Economic Panel

CHER: Consortium of Household Panels for European Socio-Economic Research

HHS: Hungarian Household Survey

HHBS: Hungarian Household Budget Survey

PSELL: Panel socio-économique "Liewen zu Lëtzebuerg"

HBS: Household Budgets Survey

NSLC: National Survey on Living Conditions

SHP: Swiss Household Panel

PSID: Panel Study of Income Dynamics

2. The basic sample is defined as the number of individuals with non-missing values for gender, educational attainment, and wage and for which the latter conforms to the definition of the variable given below.

3. Except Hungary (1997); Poland and Switzerland (2000).

4. For Canada, due to confidentiality, the number of individuals was not known.

Table 2. Descriptive statistics of gross hourly wage rate[1] for 21 OECD countries, 2001[2]
In US$ PPP

Country	Mean	Standard deviation	Coeff. of variation	Minimum	Maximum	10th percentile	90th percentile	Ratio 90th/10th percentile
Australia	14.5	7.9	0.54	1.0	129.7	7.5	22.6	3.0
Austria	11.8	5.2	0.44	1.2	43.5	6.7	18.2	2.7
Belgium	15.2	6.6	0.44	1.8	84.4	8.9	22.7	2.6
Canada[3]	16.5	14.0	0.84	..	..	..	..	..
Germany	12.5	6.1	0.49	1.0	77.6	5.6	19.7	3.5
Denmark	17.3	6.0	0.35	2.4	69.1	11.2	24.6	2.2
Spain	10.3	6.4	0.62	1.4	78.6	5.0	18.3	3.7
Finland	13.0	6.1	0.47	1.7	95.5	8.0	19.9	2.5
France	12.8	7.2	0.56	1.1	139.7	6.7	20.7	3.1
United Kingdoı	14.9	8.7	0.59	1.1	166.0	7.1	25.0	3.5
Greece	8.3	4.7	0.57	1.2	55.0	4.2	14.4	3.5
Ireland	13.4	8.1	0.60	1.5	94.6	6.5	23.5	3.6
Italy	11.1	5.4	0.49	1.2	72.8	6.6	17.0	2.6
Luxembourg	*14.6*	*8.5*	0.58	*1.1*	*88.0*	*6.8*	*24.9*	3.7
Netherlands	17.5	10.1	0.58	1.1	187.0	9.6	26.5	2.8
Portugal	6.6	5.3	0.81	1.0	68.7	3.1	12.2	3.9
Sweden	*8.3*	*4.1*	0.49	*1.0*	*120.0*	*5.0*	*11.8*	2.4
Hungary	*2.5*	*2.1*	0.83	*0.5*	*24.7*	*1.1*	*4.2*	4.0
Poland	3.7	2.6	0.70	0.5	31.2	1.7	6.3	3.6
Switzerland	*18.2*	*10.0*	0.55	*1.0*	*139.1*	*7.8*	*29.1*	3.7
United States	16.2	16.1	0.99	1.0	188.2	4.8	28.9	6.0

1. Hungary, Luxembourg, Sweden and Switzerland: net wage.
2. Except Hungary (1997); and Poland and Switzerland (2000).
3. For Canada, due to confidentiality, not all descriptive statistics are available.

Source: ECHP, CHER, BHPS, CPS, CNEF and HILDA.

Table 3. Results of the *Mincerian* wage regressions for 21 OECD countries, 2001[1]

		Australia	Austria	Belgium	Canada	Denmark	Finland	France	Germany	Greece	Hungary [2]	Ireland	Italy	Luxembourg [2]	Netherlanc	Poland	Portugal	Spain	Sweden [2]	Switzerland [2]	United Kingdom	United States
edu1	Estimate	-0.181***	-0.517***	-0.229***	-0.299***	-0.258***	-0.242***	-0.128***	-0.232***	-0.236***	-0.259***	-0.272***	-0.265***	-0.422***	-0.262***	-0.293***	-0.444***	-0.277***	-0.178***	-0.616***	-0.351***	-0.650***
	Robust std. error	[0.020]	[0.098]	[0.027]	[0.019]	[0.030]	[0.039]	[0.021]	[0.030]	[0.024]	[0.061]	[0.035]	[0.017]	[0.022]	[0.051]	[0.033]	[0.031]	[0.026]	[0.028]	[0.045]	[0.025]	[0.014]
edu1w	Estimate	-0.032	0.006	-0.019	-0.083***	-0.038	-0.009	-0.066*	0.045	0.031	-0.058	-0.003	0.003	0.015	0.103**	-0.009	-0.01	0.024	0.054	0.236***	0.019	-0.004
	Robust std. error	[0.028]	[0.040]	[0.047]	[0.028]	[0.043]	[0.041]	[0.034]	[0.039]	[0.035]	[0.071]	[0.045]	[0.024]	[0.042]	[0.045]	[0.040]	[0.034]	[0.032]	[0.039]	[0.062]	[0.031]	[0.018]
edu3	Estimate	**0.351*** **	**0.433*** **	**0.334*** **	**0.402*** **	**0.387*** **	**0.424*** **	**0.462*** **	**0.383*** **	**0.303*** **	**0.477*** **	**0.434*** **	**0.411*** **	**0.424*** **	**0.348*** **	**0.306*** **	**0.505*** **	**0.234*** **	**0.260*** **	**0.378*** **	**0.502*** **	**0.650*** **
	Robust std. error	[0.019]	[0.044]	[0.024]	[0.014]	[0.021]	[0.025]	[0.024]	[0.022]	[0.025]	[0.074]	[0.038]	[0.027]	[0.025]	[0.029]	[0.071]	[0.043]	[0.024]	[0.023]	[0.033]	[0.016]	[0.010]
edu3w	Estimate	**-0.057** **	**-0.144*** **	**-0.024**	**0.038** **	**-0.033**	**-0.065** **	**-0.010**	**0.023**	**0.083** **	**-0.011**	**0.086* **	**-0.083** **	**-0.023**	**0.030**	**0.307*** **	**0.148*** **	**0.079** **	**-0.046**	**-0.048**	**0.038* **	**-0.011**
	Robust std. error	[0.023]	[0.054]	[0.032]	[0.018]	[0.028]	[0.031]	[0.036]	[0.030]	[0.035]	[0.091]	[0.050]	[0.037]	[0.041]	[0.041]	[0.085]	[0.049]	[0.033]	[0.030]	[0.043]	[0.019]	[0.012]
exper	Estimate	0.007***	0.007***	0.010***	0.007***	0.004***	0.006***	0.007***	0.002***	0.008***	0.006**	0.006***	0.007***	0.014***	0.006***	0.005***	0.003***	0.006***	0.010***	0.017***	0.007***	0.015***
	Robust std. error	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.002]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.000]
experw	Estimate	-0.002*	0.000	-0.003*	-0.001*	-0.001	-0.003**	-0.005***	-0.002	-0.002	-0.003	-0.003**	-0.001	-0.006***	-0.003*	0.002	0.003***	0.001	-0.002*	-0.003*	-0.004***	-0.006***
	Robust std. error	[0.001]	[0.001]	[0.002]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.003]	[0.002]	[0.001]	[0.002]	[0.002]	[0.002]	[0.001]	[0.001]	[0.001]	[0.002]	[0.001]	[0.000]
woman	Estimate	-0.054**	-0.160***	-0.056	-0.247***	-0.080**	-0.121***	-0.073**	-0.137***	-0.167***	-0.101	-0.136***	-0.114***	-0.083**	-0.131***	-0.309***	-0.279***	-0.279***	-0.050	-0.143***	-0.122***	-0.186***
	Robust std. error	[0.023]	[0.034]	[0.040]	[0.020]	[0.035]	[0.037]	[0.035]	[0.034]	[0.029]	[0.071]	[0.037]	[0.024]	[0.038]	[0.046]	[0.047]	[0.031]	[0.031]	[0.036]	[0.042]	[0.022]	[0.013]
married	Estimate	0.103***	0.037**	0.008	0.157***	0.031**	0.016	0.051***	0.059***	0.106***	0.024	0.120***	0.054***	0.089***	0.055***	0.206***	0.066***	0.043***	0.030**	0.025	0.093***	0.166***
	Robust std. error	[0.012]	[0.017]	[0.016]	[0.009]	[0.014]	[0.015]	[0.015]	[0.014]	[0.016]	[0.031]	[0.026]	[0.012]	[0.016]	[0.019]	[0.023]	[0.013]	[0.014]	[0.014]	[0.019]	[0.010]	[0.006]
public	Estimate	-0.012	-0.002	-0.023	0.204***	-0.094***	-0.038**	0.058***	0.013	0.109***	-0.052	0.174***	0.067***	0.252***	-0.008	0.145***	0.204***	0.077***	-0.130***	0.049**	0.063***	-0.083***
	Robust std. error	[0.013]	[0.017]	[0.015]	[0.010]	[0.015]	[0.015]	[0.016]	[0.015]	[0.018]	[0.032]	[0.023]	[0.012]	[0.017]	[0.019]	[0.020]	[0.015]	[0.017]	[0.015]	[0.019]	[0.011]	[0.008]
part_time	Estimate	-0.011	0.060**	0.071***	-0.068***	-0.005	0.100**	0.132***	0.126***	0.293***	0.183**	0.054**	0.280***	0.112***	0.089***	0.183***	0.214***	0.086***	0.105***	0.040	-0.082***	-0.212***
	Robust std. error	[0.015]	[0.030]	[0.026]	[0.012]	[0.033]	[0.047]	[0.031]	[0.025]	[0.036]	[0.080]	[0.027]	[0.020]	[0.036]	[0.027]	[0.043]	[0.043]	[0.028]	[0.028]	[0.032]	[0.014]	[0.012]
tenure	Estimate	0.010***	0.015***	0.018***	..	0.010***	0.010***	0.031***	0.019***	0.022***	0.020***	0.018***	0.012***	..	0.019***	..	0.018***	0.028***	..	0.003**	0.007***	..
	Robust std. error	[0.002]	[0.003]	[0.003]	..	[0.002]	[0.003]	[0.003]	[0.002]	[0.003]	[0.005]	[0.004]	[0.002]	..	[0.003]	..	[0.002]	[0.002]	..	[0.001]	[0.001]	..
indef_cont	Estimate	0.046***	0.316***	0.112***	..	0.184***	0.057**	0.252***	0.296***	0.131***	..	0.179***	0.133***	0.276***	0.174***	..	0.066***	0.062***	0.280***	0.611***	0.170***	..
	Robust std. error	[0.013]	[0.036]	[0.030]	..	[0.030]	[0.027]	[0.028]	[0.024]	[0.020]	..	[0.033]	[0.022]	[0.034]	[0.047]	..	[0.016]	[0.016]	[0.040]	[0.054]	[0.025]	..
plant_size	Estimate	0.042***	0.044***	0.049***	..	0.027***	0.045***	..	0.062***	0.041***	..	0.041***	0.031***	0.041***	0.022***	..	0.044***	0.054***	0.025***	0.034***	0.041***	0.037***
	Robust std. error	[0.003]	[0.004]	[0.004]	..	[0.004]	[0.004]	..	[0.003]	[0.004]	..	[0.006]	[0.003]	[0.004]	[0.004]	..	[0.004]	[0.003]	[0.003]	[0.004]	[0.002]	[0.001]
overqualif	Estimate	-0.233***	-0.003	-0.160***	-0.377***	-0.207***	-0.305***	-0.225***	-0.281***	-0.163***	-0.021	-0.266***	-0.185***	-0.232***	-0.041	-0.234***	-0.300***	-0.234***	..	-0.132***	-0.404***	-0.455***
	Robust std. error	[0.020]	[0.050]	[0.043]	[0.023]	[0.027]	[0.036]	[0.020]	[0.025]	[0.021]	[0.053]	[0.034]	[0.017]	[0.023]	[0.033]	[0.031]	[0.025]	[0.019]	..	[0.038]	[0.014]	[0.010]
underqualif	Estimate	0.144***	0.220**	0.131***	0.240***	0.184***	0.236***	0.197***	0.127***	0.086***	0.218***	0.169***	0.123***	0.264***	0.128***	0.155***	0.357***	0.122***	..	..	0.215***	0.306***
	Robust std. error	[0.017]	[0.094]	[0.023]	[0.013]	[0.019]	[0.032]	[0.018]	[0.025]	[0.023]	[0.063]	[0.028]	[0.022]	[0.025]	[0.046]	[0.040]	[0.036]	[0.023]	..	..	[0.017]	[0.010]
Constant	Estimate	2.111***	1.713***	1.913***	2.105***	2.320***	2.023***	1.719***	1.670***	1.413***	0.575***	1.869***	1.927***	1.811***	2.187***	0.955***	1.571***	1.792***	1.470***	1.721***	1.926***	1.888***
	Robust std. error	[0.022]	[0.041]	[0.043]	[0.015]	[0.044]	[0.035]	[0.036]	[0.037]	[0.028]	[0.063]	[0.043]	[0.028]	[0.043]	[0.055]	[0.038]	[0.033]	[0.029]	[0.045]	[0.059]	[0.030]	[0.012]
Observations		5211	1965	1615	25555	1585	1866	2891	3688	2079	879	1457	3254	2213	2031	2285	3859	3615	2330	2260	7960	49571
Adjusted R-squared		0.31	0.46	0.46	0.17	0.44	0.4	0.42	0.36	0.59	0.33	0.51	0.49	0.58	0.31	0.32	0.61	0.5	0.26	0.53	0.38	0.32

Robust standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

1. Except Hungary (1997); and Poland and Switzerland (2000).

2. Estimation based on *net* hourly wages and, hence, results are not directly comparable with those for other countries.

Source: ECHP, CHER, BHPS, CPS, CNEF and HILDA and authors' calculations.

Table 4. Gross wage premia on tertiary education for men and women in 21 OECD countries, 1991-2005

Average percentage changes from wage of upper-secondary degree holders [1,2]

		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Multi-period average	Cross-period coefficient of variation
Australia	men	..	..	..	..	..	..	..	..	..	..	42.1	40.6	41.3	..	..	**41.4**	0.02
	women	..	..	..	..	..	..	..	..	..	..	34.2	40.0	39.2	..	..	**37.8**	0.08
	difference m-w	..	..	..	..	..	..	..	..	..	..	*7.9*	*0.7*	*2.2*	..	..	*3.6*	
Austria	men	..	..	..	..	63.4	61.7	51.2	54.8	58.9	61.8	53.8	..	..	..	..	**58.0**	0.08
	women	..	..	..	..	74.4	76.0	54.7	48.9	49.8	39.1	33.3	..	..	..	..	**53.7**	0.30
	difference m-w	..	..	..	..	*-11.0*	*-14.3*	*-3.5*	*5.9*	*9.2*	*22.7*	*20.5*	..	..	..	..	*4.2*	
Belgium	men	..	..	..	36.9	34.9	35.9	36.7	43.2	36.1	36.1	40.2	..	..	..	..	**37.5**	0.07
	women	..	..	..	24.9	28.8	24.4	30.0	31.4	45.0	34.2	36.3	..	..	..	..	**31.9**	0.21
	difference m-w	..	..	..	*12.0*	*6.1*	*11.6*	*6.7*	*11.8*	*-8.8*	*1.9*	*3.8*	..	..	..	..	*5.6*	
Canada	men	..	..	27.7	26.3	29.3	40.2	31.3	38.9	38.7	51.9	49.5	47.1	..	..	..	**38.1**	0.24
	women	..	..	39.3	37.6	34.4	41.4	36.8	43.3	42.8	58.7	55.4	55.2	..	..	..	**44.5**	0.20
	difference m-w	..	..	*-11.6*	*-11.3*	*-5.1*	*-1.2*	*-5.4*	*-4.4*	*-4.1*	*-6.8*	*-5.8*	*-8.1*	..	..	..	*-6.4*	
Denmark	men	..	..	..	24.1	31.6	30.2	31.2	38.5	39.8	40.5	47.6	..	..	..	..	**35.4**	0.21
	women	..	..	..	25.2	29.2	30.8	25.3	38.4	35.9	37.2	42.6	..	..	..	..	**33.1**	0.19
	difference m-w	..	..	..	*-1.1*	*2.4*	*-0.6*	*5.9*	*0.1*	*3.8*	*3.3*	*5.0*	..	..	..	..	*2.4*	
Finland	men	..	..	..	..	..	53.6	56.4	47.4	53.5	54.5	52.6	..	..	..	..	**53.0**	0.06
	women	..	..	..	..	..	39.8	38.2	36.0	41.3	38.9	43.1	..	..	..	..	**39.5**	0.06
	difference m-w	..	..	..	..	..	*13.8*	*18.2*	*11.5*	*12.2*	*15.7*	*9.6*	..	..	..	..	*13.5*	
France	men	..	..	..	67.9	65.5	66.3	70.3	72.6	64.8	71.1	58.8	..	..	..	..	**67.2**	0.07
	women	..	..	..	56.7	55.9	56.4	63.8	63.7	57.7	57.6	57.2	..	..	..	..	**58.6**	0.05
	difference m-w	..	..	..	*11.2*	*9.6*	*9.9*	*6.5*	*8.9*	*7.0*	*13.6*	*1.6*	..	..	..	..	*8.5*	
Germany	men	..	..	..	41.9	42.4	39.9	40.7	46.3	53.5	50.5	46.3	..	..	..	..	**45.2**	0.11
	women	..	..	..	35.2	42.8	37.4	41.1	40.8	47.1	42.2	49.6	..	..	..	..	**42.0**	0.11
	difference m-w	..	..	..	*6.8*	*-0.4*	*2.5*	*-0.3*	*5.5*	*6.4*	*8.3*	*-3.3*	..	..	..	..	*3.2*	
Greece	men	..	..	..	30.6	30.1	32.6	30.2	29.2	35.4	35.7	35.3	..	..	..	..	**32.4**	0.08
	women	..	..	..	26.6	23.4	27.5	33.4	50.7	45.2	45.5	47.2	..	..	..	..	**37.4**	0.29
	difference m-w	..	..	..	*3.9*	*6.7*	*5.1*	*-3.1*	*-21.4*	*-9.8*	*-9.8*	*-11.9*	..	..	..	..	*-5.0*	
Hungary[3]	men	..	66.2	58.6	61.2	41.1	55.5	61.1	..	..	..	..	..	..	..	..	**57.3**	0.15
	women	..	44.1	58.9	66.4	58.4	49.9	59.3	..	..	..	..	..	..	..	..	**56.2**	0.14
	difference m-w	..	*22.1*	*-0.4*	*-5.2*	*-17.3*	*5.7*	*1.8*	..	..	..	..	..	..	..	..	*1.1*	
Ireland	men	..	..	..	31.8	37.3	40.3	60.5	53.3	51.7	52.8	54.3	..	..	..	..	**47.8**	0.21
	women	..	..	..	40.5	47.8	51.1	76.0	58.7	71.7	59.6	68.4	..	..	..	..	**59.2**	0.21
	difference m-w	..	..	..	*-8.7*	*-10.5*	*-10.9*	*-15.5*	*-5.3*	*-20.0*	*-6.8*	*-14.1*	..	..	..	..	*-11.5*	

Table 4. Gross wage premia on tertiary education for men and women in 21 OECD countries, 1991-2005 (cont.)

Average percentage changes from wage of upper-secondary degree holders [1,2]

Italy	men	..	..	..	42.3	39.8	43.1	44.6	51.8	50.4	49.6	50.9	..	..	..	..	**46.6**	0.10
	women	..	..	..	39.2	37.5	35.5	35.1	38.3	40.4	43.1	38.8	..	..	..	..	**38.5**	0.07
	difference m-w	..	..	..	*3.1*	*2.3*	*7.6*	*9.5*	*13.5*	*10.0*	*6.4*	*12.1*	..	..	..	..	*8.1*	
Luxembourg[3]	men	..	..	..	..	62.7	56.2	51.4	64.5	62.5	67.4	52.6	..	..	..	..	**59.6**	0.10
	women	..	..	..	..	67.6	51.7	50.4	59.0	53.8	56.4	49.3	..	..	..	..	**55.5**	0.11
	difference m-w	..	..	..	..	*-4.9*	*4.5*	*0.9*	*5.5*	*8.6*	*11.1*	*3.3*	..	..	..	..	*4.1*	
Netherlands	men	..	..	..	48.9	49.3	48.6	43.0	40.3	33.4	38.5	41.7	..	..	..	..	**43.0**	0.13
	women	..	..	..	36.2	41.0	41.7	32.0	31.1	30.9	30.3	45.9	..	..	..	..	**36.1**	0.17
	difference m-w	..	..	..	*12.6*	*8.3*	*6.9*	*11.0*	*9.2*	*2.5*	*8.2*	*-4.2*	..	..	..	..	*6.8*	
Poland	men	..	..	..	..	..	..	40.2	48.5	52.9	35.8	..	..	..	..	..	**44.4**	0.18
	women	..	..	..	..	..	..	55.9	65.8	80.1	84.7	..	..	..	..	..	**71.6**	0.18
	difference m-w	..	..	..	..	..	..	*-15.7*	*-17.2*	*-27.1*	*-48.9*	..	..	..	..	..	*-27.2*	
Portugal	men	..	..	..	67.0	87.2	104.6	80.2	87.6	75.8	87.0	65.8	..	..	..	..	**81.9**	0.15
	women	..	..	..	68.6	77.1	90.2	77.2	95.7	82.2	113.6	91.8	..	..	..	..	**87.1**	0.16
	difference m-w	..	..	..	*-1.6*	*10.1*	*14.4*	*3.1*	*-8.1*	*-6.3*	*-26.6*	*-26.0*	..	..	..	..	*-5.1*	
Spain	men	..	..	..	27.8	29.8	29.8	23.4	22.2	18.2	15.6	26.9	..	..	..	..	**24.2**	0.22
	women	..	..	..	34.5	36.8	34.6	29.8	25.2	25.2	25.0	36.5	..	..	..	..	**31.0**	0.17
	difference m-w	..	..	..	*-6.7*	*-7.0*	*-4.8*	*-6.4*	*-3.0*	*-7.0*	*-9.4*	*-9.6*	..	..	..	..	*-6.7*	
Sweden[3]	men	..	..	..	..	..	..	27.2	32.1	32.9	32.1	29.6	..	..	..	..	**30.8**	0.08
	women	..	..	..	..	..	..	25.5	24.4	18.5	22.1	23.7	..	..	..	..	**22.9**	0.12
	difference m-w	..	..	..	..	..	..	*1.7*	*7.7*	*14.3*	*9.9*	*5.9*	..	..	..	..	*7.9*	
Switzerland[3]	men	..	..	..	..	..	..	..	..	50.7	46.0	..	..	..	..	..	**48.4**	0.07
	women	..	..	..	..	..	..	..	..	40.9	39.2	..	..	..	..	..	**40.1**	0.03
	difference m-w	..	..	..	..	..	..	..	..	*9.8*	*6.8*	..	..	..	..	..	*8.3*	
United Kingdom	men	69.7	68.5	71.5	69.2	62.8	68.3	65.9	66.4	68.9	64.5	65.2	62.9	58.5	52.1	..	**65.3**	0.08
	women	72.3	84.7	79.7	74.5	74.5	71.1	74.4	75.1	71.7	65.2	71.5	69.3	61.9	53.9	..	**71.4**	0.10
	difference m-w	*-2.6*	*-16.2*	*-8.2*	*-5.2*	*-11.6*	*-2.8*	*-8.5*	*-8.7*	*-2.8*	*-0.7*	*-6.3*	*-6.4*	*-3.3*	*-1.8*	..	*-6.1*	
United States	men	..	..	..	80.9	80.1	84.1	80.3	76.9	90.5	89.8	91.6	100.8	92.2	95.4	94.6	**88.1**	0.08
	women	..	..	..	82.6	84.1	87.6	84.9	82.5	89.0	87.9	89.4	94.2	84.0	90.6	89.9	**87.2**	0.04
	difference m-w	..	..	..	*-1.8*	*-4.0*	*-3.6*	*-4.6*	*-5.6*	*1.5*	*1.9*	*2.2*	*6.6*	*8.2*	*4.8*	*4.6*	*0.9*	

.. means "not available"

1. Effect of changing variable *edu* 3 from 0 to 1, leaving other variables unchanged. Given the point estimates for men (α2) and women (α2+α4), premia equal [exp(α2)-1]*100% and [exp(α2+α4)-1]*100%, respectively.

2. t-values of the underlying point estimates not reported. All coefficients for men significant at the 1% level. Wage premia for women are significantly different from zero but not all are significantly different from male wage premia (see Figure 11).

3. Estimation based on *net* hourly wages and, hence, results not directly comparable with those for other countries.

Source: Authors' calculations.

Table 5. Gross wage premia on upper-secondary education for men and women in 21 OECD countries, 1991-2005

Average percentage changes from wage of persons with less than upper-secondary degree [1,2]

		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Multi-period average	Cross-period coefficient of variation
Australia	men	..	..	..	..	..	..	..	..	..	..	19.9	21.1	21.0	..	..	**20.7**	0.03
	women	..	..	..	..	..	..	..	..	..	..	23.8	17.6	24.2	..	..	**21.9**	0.17
	difference m-w	..	..	..	..	..	..	..	..	..	..	*-3.9*	*3.5*	*-3.2*	..	..	*-1.2*	
Austria	men	..	..	..	..	28.1	26.6	32.5	33.3	43.1	31.0	68.2	..	..	..	..	**37.5**	0.39
	women	..	..	..	..	29.5	33.6	35.6	33.1	40.8	33.0	67.2	..	..	..	..	**39.0**	0.33
	difference m-w	..	..	..	..	*-1.5*	*-7.0*	*-3.1*	*0.2*	*2.3*	*-2.0*	*1.0*	..	..	..	..	*-1.5*	
Belgium	men	..	..	..	11.7	12.6	12.5	17.8	19.5	18.7	20.5	25.5	..	..	..	..	**17.4**	0.28
	women	..	..	..	26.6	28.8	27.3	25.9	27.6	16.5	6.7	28.7	..	..	..	..	**23.5**	0.33
	difference m-w	..	..	..	*-14.9*	*-16.2*	*-14.8*	*-8.1*	*-8.1*	*2.2*	*13.9*	*-3.2*	..	..	..	..	*-6.1*	
Canada	men	..	..	33.5	32.5	22.2	25.5	23.8	26.8	29.3	27.9	34.9	24.0	..	..	..	**28.0**	0.16
	women	..	..	29.0	33.3	29.7	35.5	29.1	40.6	40.3	44.6	46.6	39.5	..	..	..	**36.8**	0.18
	difference m-w	..	..	*4.5*	*-0.8*	*-7.6*	*-10.0*	*-5.3*	*-13.8*	*-11.0*	*-16.7*	*-11.7*	*-15.6*	..	..	..	*-8.8*	
Denmark	men	..	..	..	32.7	24.0	23.0	27.8	36.0	36.3	33.7	29.3	..	..	..	..	**30.3**	0.17
	women	..	..	..	27.8	21.8	21.5	28.9	34.1	42.0	48.2	33.9	..	..	..	..	**32.3**	0.29
	difference m-w	..	..	..	*5.0*	*2.2*	*1.4*	*-1.1*	*1.9*	*-5.7*	*-14.5*	*-4.6*	..	..	..	..	*-1.9*	
Finland	men	..	..	..	..	..	12.7	16.8	16.1	28.9	36.2	27.2	..	..	..	..	**23.0**	0.40
	women	..	..	..	..	..	15.0	16.5	14.4	22.3	37.3	28.5	..	..	..	..	**22.3**	0.41
	difference m-w	..	..	..	..	..	*-2.3*	*0.3*	*1.7*	*6.6*	*-1.1*	*-1.4*	..	..	..	..	*0.7*	
France	men	..	..	..	30.3	28.8	25.0	20.7	23.7	16.0	10.7	13.6	..	..	..	..	**21.1**	0.34
	women	..	..	..	36.1	32.0	30.3	29.7	28.6	21.8	22.8	21.4	..	..	..	..	**27.8**	0.19
	difference m-w	..	..	..	*-5.8*	*-3.2*	*-5.3*	*-9.0*	*-4.9*	*-5.8*	*-12.0*	*-7.8*	..	..	..	..	*-6.7*	
Germany	men	..	..	..	9.6	13.1	15.5	18.7	21.0	23.5	27.6	26.7	..	..	..	..	**19.5**	0.33
	women	..	..	..	17.3	20.6	27.6	30.3	28.5	23.4	29.0	21.1	..	..	..	..	**24.7**	0.19
	difference m-w	..	..	..	*-7.7*	*-7.5*	*-12.1*	*-11.5*	*-7.5*	*0.1*	*-1.5*	*5.6*	..	..	..	..	*-5.3*	
Greece	men	..	..	..	31.4	34.1	26.0	22.4	27.5	28.1	26.8	26.6	..	..	..	..	**27.9**	0.13
	women	..	..	..	32.0	39.3	32.7	30.5	26.5	34.0	26.6	22.6	..	..	..	..	**30.5**	0.17
	difference m-w	..	..	..	*-0.6*	*-5.3*	*-6.7*	*-8.0*	*1.0*	*-5.9*	*0.2*	*4.0*	..	..	..	..	*-2.7*	
Hungary[3]	men	..	36.2	41.5	38.3	54.3	31.6	29.6	..	..	..	..	..	..	..	..	**38.6**	0.23
	women	..	47.5	41.3	46.5	54.2	43.9	37.4	..	..	..	..	..	..	..	..	**45.1**	0.13
	difference m-w	..	*-11.3*	*0.2*	*-8.1*	*0.1*	*-12.3*	*-7.8*	..	..	..	..	..	..	..	..	*-6.5*	
Ireland	men	..	..	..	29.9	32.5	26.4	30.4	25.8	25.9	22.3	31.4	..	..	..	..	**28.1**	0.13
	women	..	..	..	35.5	39.8	35.3	42.9	38.1	35.0	33.5	31.4	..	..	..	..	**36.4**	0.10
	difference m-w	..	..	..	*-5.6*	*-7.3*	*-8.9*	*-12.4*	*-12.4*	*-9.1*	*-11.2*	*0.0*	..	..	..	..	*-8.4*	

Table 5. Gross wage premia on upper-secondary education for men and women in 21 OECD countries, 1991-2005 (cont.)

Average percentage changes from wage of persons with less than upper-secondary degree [1,2]

Italy	men	..	..	..	34.6	28.3	28.5	27.5	25.4	24.4	25.8	30.6	..	..	..	..	**28.1**	0.12
	women	..	..	..	39.3	32.2	30.5	33.6	32.5	29.4	25.2	30.2	..	..	..	..	**31.6**	0.13
	difference m-w	..	..	..	*-4.6*	*-4.0*	*-2.0*	*-6.1*	*-7.1*	*-5.0*	*0.6*	*0.4*	..	..	..	..	*-3.5*	
Luxembourg[3]	men	..	..	..	..	66.4	50.6	49.4	43.7	50.0	52.0	52.3	..	..	..	..	**52.1**	0.13
	women	..	..	..	..	72.6	68.7	52.2	39.1	47.9	57.6	50.4	..	..	..	..	**55.5**	0.21
	difference m-w	..	..	..	..	*-6.2*	*-18.1*	*-2.8*	*4.6*	*2.1*	*-5.6*	*1.9*	..	..	..	..	*-3.4*	
Netherlands	men	..	..	..	40.4	29.0	33.1	29.9	28.2	24.3	26.0	30.1	..	..	..	..	**30.1**	0.16
	women	..	..	..	38.0	32.1	28.1	30.2	24.4	21.7	21.2	17.4	..	..	..	..	**26.7**	0.25
	difference m-w	..	..	..	*2.4*	*-3.1*	*5.0*	*-0.3*	*3.8*	*2.6*	*4.8*	*12.7*	..	..	..	..	*3.5*	
Poland	men	..	..	..	..	..	..	35.0	31.2	36.1	34.1	..	..	..	..	..	**34.1**	0.06
	women	..	..	..	..	..	..	30.7	30.1	34.3	35.3	..	..	..	..	..	**32.6**	0.08
	difference m-w	..	..	..	..	..	..	*4.4*	*1.1*	*1.7*	*-1.2*	..	..	..	..	..	*1.5*	
Portugal	men	..	..	..	77.8	74.8	61.3	72.6	41.9	54.7	44.8	55.9	..	..	..	..	**60.5**	0.23
	women	..	..	..	98.5	92.8	86.0	84.7	53.3	59.0	48.2	57.8	..	..	..	..	**72.5**	0.27
	difference m-w	..	..	..	*-20.7*	*-18.0*	*-24.8*	*-12.1*	*-11.5*	*-4.3*	*-3.4*	*-1.8*	..	..	..	..	*-12.1*	
Spain	men	..	..	..	42.8	43.9	45.6	49.3	49.5	42.3	41.4	31.4	..	..	..	..	**43.3**	0.13
	women	..	..	..	47.3	47.4	39.9	47.3	50.2	45.5	40.6	28.6	..	..	..	..	**43.3**	0.16
	difference m-w	..	..	..	*-4.5*	*-3.5*	*5.7*	*2.1*	*-0.7*	*-3.2*	*0.8*	*2.8*	..	..	..	..	*-0.1*	
Sweden[3]	men	..	..	..	..	..	..	14.3	14.8	16.5	20.0	19.3	..	..	..	..	**17.0**	0.15
	women	..	..	..	..	..	..	11.3	8.8	14.7	8.9	13.3	..	..	..	..	**11.4**	0.23
	difference m-w	..	..	..	..	..	..	*3.0*	*5.9*	*1.8*	*11.1*	*6.0*	..	..	..	..	*5.6*	
Switzerland[3]	men	..	..	..	..	..	..	..	..	106.7	85.2	..	..	..	..	..	**96.0**	0.16
	women	..	..	..	..	..	..	..	..	71.6	46.3	..	..	..	..	..	**58.9**	0.30
	difference m-w	..	..	..	..	..	..	..	..	*35.1*	*38.9*	..	..	..	..	..	*37.0*	
United Kingdom	men	32.2	48.9	49.4	56.7	47.8	52.5	47.8	43.5	44.7	45.9	42.0	39.5	43.5	43.4	..	**45.6**	0.13
	women	38.8	47.3	53.1	55.2	53.0	56.1	47.6	46.3	45.2	42.4	39.3	41.1	42.2	43.7	..	**46.5**	0.13
	difference m-w	*-6.6*	*1.6*	*-3.6*	*1.5*	*-5.2*	*-3.5*	*0.2*	*-2.9*	*-0.5*	*3.4*	*2.7*	*-1.6*	*1.3*	*-0.3*	..	*-1.0*	
United States	men	..	..	..	95.9	90.1	85.6	95.2	86.7	92.5	94.8	91.5	89.9	82.1	85.5	84.1	**89.5**	0.05
	women	..	..	..	82.8	88.9	78.2	83.7	87.8	83.4	92.2	92.3	91.1	76.3	79.1	82.8	**84.9**	0.07
	difference m-w	..	..	..	*13.1*	*1.2*	*7.4*	*11.5*	*-1.1*	*9.2*	*2.6*	*-0.9*	*-1.2*	*5.8*	*6.4*	*1.4*	*4.6*	

.. means "not available"

1. Effect of changing variable *edu* 1 from 0 to 1, leaving other variables unchanged. As the Mincer equations use the average upper-secondary degree holder as the reference person, this requires transforming the initial (negative) Mincer coefficient for men, $\alpha 1$, into $[1/\exp(\alpha 1)-1]*100\%$ and that for women, $(\alpha 1+\alpha 3)$, into $[1/\exp(\alpha 1+\alpha 3)-1]*100\%$. Example: $\alpha 1=-0.30$ would translate into an upper-secondary wage premium of 35% as $(1/\exp(-0.30))-1 = 0.35$.

2. t-values of the underlying point estimates not reported. All coefficients for men are significant at the 1% level except for Belgium in 2000 (5% level). Wage premia for women are also significantly different from zero but not all of them are significantly different from male premia.

3. Estimation based on net hourly wages and, hence, results not directly comparable with those for other countries.

Source: Authors' calculations.

Table 6. Annual gross wage premium on labour market experience for men and women in 21 OECD countries, 1991-2005

Point estimates [1]

		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Multi-period average	Cross-period coefficient of variation
Australia	men	..	..	..	..	..	..	..	..	..	..	0.007	0.008	0.008	..	..	**0.007**	0.08
	women	..	..	..	..	..	..	..	..	..	..	0.005	0.005	0.005	..	..	**0.005**	0.08
	difference m-w	..	..	..	..	..	..	..	..	..	..	*0.002*	*0.002*	*0.002*	..	..	*0.002*	
Austria	men	..	..	..	..	0.008	0.008	0.010	0.008	0.008	0.007	0.007	..	..	..	..	**0.008**	0.12
	women	..	..	..	..	0.005	0.005	0.005	0.006	0.007	0.006	0.007	..	..	..	..	**0.006**	0.15
	difference m-w	..	..	..	..	*0.003*	*0.003*	*0.005*	*0.003*	*0.001*	*0.001*	*0.000*	..	..	..	..	*0.002*	
Belgium	men	..	..	..	0.007	0.008	0.007	0.010	0.011	0.010	0.012	0.010	..	..	..	..	**0.009**	0.20
	women	..	..	..	0.003	0.005	0.005	0.006	0.007	0.003	0.008	0.007	..	..	..	..	**0.006**	0.31
	difference m-w	..	..	..	*0.003*	*0.003*	*0.002*	*0.004*	*0.004*	*0.006*	*0.004*	*0.003*	..	..	..	..	*0.004*	
Canada	men	..	..	0.009	0.010	0.010	0.009	0.008	0.009	0.008	0.008	0.007	0.007	..	..	..	**0.009**	0.13
	women	..	..	0.006	0.009	0.009	0.008	0.007	0.007	0.007	0.007	0.006	0.006	..	..	..	**0.007**	0.15
	difference m-w	..	..	*0.003*	*0.001*	*0.001*	*0.002*	*0.001*	*0.002*	*0.002*	*0.001*	*0.001*	*0.001*	..	..	..	*0.002*	
Denmark	men	..	..	..	0.007	0.007	0.007	0.010	0.006	0.005	0.005	0.004	..	..	..	..	**0.006**	0.26
	women	..	..	..	0.004	0.005	0.005	0.006	0.005	0.006	0.005	0.003	..	..	..	..	**0.005**	0.16
	difference m-w	..	..	..	*0.002*	*0.002*	*0.002*	*0.003*	*0.001*	*-0.001*	*0.000*	*0.001*	..	..	..	..	*0.001*	
Finland	men	..	..	..	..	..	0.008	0.007	0.008	0.008	0.006	0.006	..	..	..	..	**0.007**	0.11
	women	..	..	..	..	..	0.004	0.003	0.003	0.003	0.004	0.003	..	..	..	..	**0.003**	0.22
	difference m-w	..	..	..	..	..	*0.003*	*0.004*	*0.005*	*0.005*	*0.003*	*0.003*	..	..	..	..	*0.004*	
France	men	..	..	..	0.005	0.003	0.005	0.006	0.006	0.006	0.007	0.007	..	..	..	..	**0.006**	0.24
	women	..	..	..	0.002	0.001	0.001	0.002	0.003	0.001	0.000	0.002	..	..	..	..	**0.002**	0.46
	difference m-w	..	..	..	*0.002*	*0.002*	*0.003*	*0.004*	*0.003*	*0.005*	*0.007*	*0.005*	..	..	..	..	*0.004*	
Germany	men	..	..	..	0.001	0.001	0.001	0.002	0.002	0.004	0.004	0.002	..	..	..	..	**0.002**	0.64
	women	..	..	..	-0.003	-0.002	-0.002	0.000	0.000	0.001	0.002	0.001	..	..	..	..	**0.000**	-4.30
	difference m-w	..	..	..	*0.003*	*0.003*	*0.003*	*0.002*	*0.002*	*0.003*	*0.002*	*0.002*	..	..	..	..	*0.002*	
Greece	men	..	..	..	0.007	0.006	0.005	0.006	0.007	0.008	0.007	0.008	..	..	..	..	**0.007**	0.15
	women	..	..	..	0.006	0.004	0.004	0.007	0.007	0.008	0.007	0.006	..	..	..	..	**0.006**	0.25
	difference m-w	..	..	..	*0.002*	*0.002*	*0.002*	*-0.002*	*0.001*	*0.000*	*0.001*	*0.002*	..	..	..	..	*0.001*	
Hungary [2]	men	..	0.004	0.004	0.005	0.004	0.005	0.006	..	..	..	..	..	..	..	..	**0.005**	0.13
	women	..	0.006	0.004	0.006	0.005	0.004	0.002	..	..	..	..	..	..	..	..	**0.004**	0.27
	difference m-w	..	*-0.001*	*0.000*	*-0.001*	*0.000*	*0.001*	*0.003*	..	..	..	..	..	..	..	..	*0.000*	
Ireland	men	..	..	..	0.009	0.009	0.010	0.008	0.009	0.008	0.006	0.006	..	..	..	..	**0.008**	0.19
	women	..	..	..	0.003	0.003	0.004	0.004	0.005	0.005	0.002	0.003	..	..	..	..	**0.003**	0.33
	difference m-w	..	..	..	*0.006*	*0.006*	*0.006*	*0.004*	*0.004*	*0.003*	*0.004*	*0.003*	..	..	..	..	*0.005*	

Table 6. Annual gross wage premium on labour market experience for men and women in 21 OECD countries, 1991-2005 (cont.)

Point estimates [1]

Italy	men	..	..	..	0.005	0.005	0.006	0.006	0.006	0.006	0.006	0.007	..	..	..	..	**0.006**	0.10
	women	..	..	..	0.002	0.003	0.003	0.004	0.005	0.004	0.004	0.006	..	..	..	..	**0.004**	0.27
	difference m-w	..	..	..	*0.003*	*0.002*	*0.002*	*0.001*	*0.000*	*0.002*	*0.002*	*0.001*	..	..	..	..	*0.002*	
Luxembourg [2]	men	..	..	..	..	0.019	0.016	0.016	0.014	0.014	0.016	0.014	..	..	..	..	**0.016**	0.13
	women	..	..	..	..	0.016	0.013	0.009	0.007	0.007	0.008	0.008	..	..	..	..	**0.010**	0.35
	difference m-w	..	..	..	..	*0.004*	*0.003*	*0.006*	*0.007*	*0.007*	*0.008*	*0.006*	..	..	..	..	*0.006*	
Netherlands	men	..	..	..	0.007	0.007	0.007	0.008	0.006	0.005	0.006	0.006	..	..	..	..	**0.006**	0.13
	women	..	..	..	0.004	0.005	0.004	0.004	0.003	0.003	0.004	0.003	..	..	..	..	**0.004**	0.19
	difference m-w	..	..	..	*0.003*	*0.002*	*0.003*	*0.004*	*0.003*	*0.002*	*0.002*	*0.003*	..	..	..	..	*0.003*	
Poland	men	..	..	..	..	..	..	0.005	0.004	0.005	0.005	..	..	..	..	..	**0.005**	0.09
	women	..	..	..	..	..	..	0.006	0.006	0.006	0.006	..	..	..	..	..	**0.006**	0.04
	difference m-w	..	..	..	..	..	..	*-0.001*	*-0.002*	*-0.001*	*-0.001*	..	..	..	..	..	*-0.001*	
Portugal	men	..	..	..	0.001	0.000	0.001	0.001	0.003	0.003	0.001	0.003	..	..	..	..	**0.002**	0.73
	women	..	..	..	0.002	0.001	0.002	0.002	0.004	0.004	0.004	0.006	..	..	..	..	**0.003**	0.48
	difference m-w	..	..	..	*-0.001*	*-0.001*	*-0.001*	*-0.001*	*-0.001*	*-0.002*	*-0.002*	*-0.003*	..	..	..	..	*-0.001*	
Spain	men	..	..	..	0.004	0.006	0.006	0.007	0.007	0.006	0.005	0.006	..	..	..	..	**0.006**	0.13
	women	..	..	..	0.006	0.006	0.005	0.007	0.006	0.006	0.006	0.007	..	..	..	..	**0.006**	0.11
	difference m-w	..	..	..	*-0.002*	*0.000*	*0.001*	*-0.001*	*0.000*	*0.000*	*-0.001*	*-0.001*	..	..	..	..	*0.000*	
Sweden [2]	men	..	..	..	..	..	..	0.009	0.009	0.009	0.009	0.010	..	..	..	..	**0.009**	0.03
	women	..	..	..	..	..	..	0.008	0.006	0.009	0.007	0.008	..	..	..	..	**0.007**	0.12
	difference m-w	..	..	..	..	..	..	*0.002*	*0.003*	*0.001*	*0.003*	*0.002*	..	..	..	..	*0.002*	
Switzerland [2]	men	..	..	..	..	..	..	..	..	0.015	0.017	..	..	..	..	..	**0.016**	0.09
	women	..	..	..	..	..	..	..	..	0.011	0.014	..	..	..	..	..	**0.012**	0.15
	difference m-w	..	..	..	..	..	..	..	..	*0.004*	*0.003*	..	..	..	..	..	*0.003*	
United Kingdom	men	0.009	0.009	0.008	0.009	0.009	0.010	0.009	0.008	0.008	0.008	0.007	0.006	0.006	0.007	..	**0.008**	0.14
	women	0.004	0.005	0.005	0.005	0.005	0.005	0.004	0.004	0.005	0.003	0.003	0.003	0.004	0.003	..	**0.004**	0.22
	difference m-w	*0.005*	*0.004*	*0.004*	*0.004*	*0.004*	*0.005*	*0.005*	*0.004*	*0.003*	*0.005*	*0.004*	*0.003*	*0.003*	*0.004*	..	*0.004*	
United States	men	..	..	..	0.018	0.018	0.018	0.017	0.013	0.017	0.016	0.015	0.015	0.014	0.015	0.015	**0.016**	0.10
	women	..	..	..	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.010	0.011	0.011	0.011	0.011	**0.011**	0.04
	difference m-w	..	..	..	*0.007*	*0.007*	*0.006*	*0.006*	*0.002*	*0.006*	*0.005*	*0.006*	*0.004*	*0.004*	*0.004*	*0.004*	*0.005*	

.. means "not available"

The numbers for men shown in this table correspond to coefficient β1 of the Mincer equation, the numbers for women to (β1+β3).

1. Given that the small values of the point estimates, the latter are a very close approximation of the precise annual percentage wage increase, [exp(β1)-1]*100% for men and [exp(β1+β3)-1]*100% for women.

t-values are not reported. All coefficients for men are significant at the 1% level with the following exceptions: insignificant for Portugal from 1994 to 1997 and Germany 1994 to 1996;

significant at the 10% level for Portugal 2000; and significant at the 5% level for Germany 1997 and Hungary 1993, 1995 and 1997.

Experience premia for women are also significantly different from zero but not all of them are significantly different from male wage premia.

2. Estimation based on *net* hourly wages.

Source: Authors' calculations.

Table A1.1. Correlogrammes of independent variables for 20 OECD countries[1], 2001[2]

Australia n=5211	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	**-0.11**								
woman	**0.05**	**-0.13**							
married	0.00	**0.29**	**-0.04**						
public	**0.27**	**0.09**	**0.15**	**0.06**					
part time	-0.03	**-0.07**	**0.29**	0.01	0.01				
tenure	0.02	**0.45**	-0.03	**0.19**	**0.22**	**-0.10**			
indefinite contract	**0.08**	**0.15**	**-0.08**	**0.10**	**0.05**	**-0.30**	**0.28**		
firmsize	**0.15**	**0.05**	0.00	0.03	**0.19**	**-0.11**	**0.17**	**0.12**	
overqualified	**0.28**	**-0.05**	0.02	**-0.04**	**-0.04**	**0.06**	**-0.08**	-0.02	0.00
underqualified	**-0.57**	**0.15**	**0.06**	**0.05**	**-0.08**	0.01	**0.06**	0.01	**-0.06**

Austria n = 1965	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	0.00								
woman	-0.05	**-0.06**							
married	**0.12**	**0.47**	-0.04						
public	**0.20**	**0.17**	**0.07**	**0.13**					
part time	-0.03	**0.06**	**0.35**	**0.19**	0.02				
tenure	**0.10**	**0.52**	**-0.07**	**0.28**	**0.25**	**-0.06**			
indefinite contract	**0.24**	**0.30**	-0.01	**0.21**	**0.09**	0.04	**0.31**		
firmsize	**0.07**	**0.07**	**-0.15**	0.06	**0.12**	**-0.12**	**0.14**	**0.10**	
overqualified	**0.53**	-0.04	0.02	**0.06**	**0.11**	-0.02	0.04	0.01	**0.07**
underqualified	**-0.80**	-0.03	**0.10**	**-0.09**	**-0.07**	0.03	**-0.09**	**-0.32**	-0.01

Belgium n = 1615	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	**-0.32**								
woman	**0.14**	**-0.13**							
married	-0.02	**0.31**	**-0.06**						
public	**0.07**	**0.13**	**0.12**	0.00					
part time	-0.04	0.02	**0.35**	0.08	**0.07**				
tenure	**-0.07**	**0.50**	-0.04	**0.27**	**0.17**	0.01			
indefinite contract	0.00	**0.21**	**-0.07**	**0.14**	**-0.14**	-0.04	**0.31**		
firmsize	0.06	**0.11**	**-0.14**	**0.06**	0.07	**-0.11**	**0.18**	**0.11**	
overqualified	0.06	**-0.10**	0.00	-0.04	-0.09	0.00	**-0.11**	-0.04	**-0.08**
underqualified	**-0.50**	**0.22**	-0.03	0.02	0.08	0.05	**0.11**	-0.01	-0.03

Denmark n = 1585	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	**-0.11**								
woman	**0.07**	**-0.07**							
married	0.03	**0.36**	-0.01						
public	**0.22**	**-0.10**	**0.36**	-0.03					
part time	-0.01	0.03	**0.25**	0.04	**0.12**				
tenure	**-0.10**	**0.44**	**-0.11**	**0.23**	**-0.23**	**-0.09**			
indefinite contract	**0.09**	**0.17**	-0.01	**0.15**	**-0.09**	**-0.13**	**0.28**		
firmsize	**0.08**	-0.03	-0.01	0.05	0.01	**-0.14**	0.05	0.04	
overqualified	**0.35**	-0.04	**0.10**	-0.04	**0.13**	0.05	-0.05	-0.03	**0.08**
underqualified	**-0.50**	**0.07**	0.00	0.02	-0.06	-0.02	0.00	-0.05	-0.04

Table A1.1. Correlogrammes of independent variables for 20 OECD countries[1], 2001[2] (cont.)

Finland n = 1866	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	**-0.20**								
woman	**0.07**	**0.10**							
married	**0.09**	**0.31**	0.00						
public	**0.19**	**0.17**	**0.28**	**0.12**					
part time	-0.04	**0.07**	**0.10**	0.01	0.05				
tenure	-0.05	**0.52**	**0.06**	**0.20**	**0.22**	-0.01			
indefinite contract	-0.02	**0.16**	**-0.07**	**0.07**	**-0.11**	**-0.08**	**0.33**		
firmsize	**0.09**	-0.01	**-0.06**	-0.04	**0.06**	**-0.06**	**0.12**	0.06	
overqualified	**0.27**	0.00	**-0.11**	0.04	-0.03	-0.01	-0.05	0.02	-0.05
underqualified	**-0.67**	**0.15**	-0.04	**-0.07**	**-0.13**	0.05	0.02	-0.01	-0.06

France n = 2891	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	**-0.28**								
woman	**0.08**	**-0.06**							
married	-0.03	**0.35**	**-0.05**						
public	**0.10**	**0.11**	**0.12**	**0.05**					
part time	0.02	-0.02	**0.22**	0.01	**0.07**				
tenure	**-0.12**	**0.56**	**-0.06**	**0.30**	**0.19**	-0.05			
indefinite contract	0.02	**0.24**	-0.02	**0.19**	-0.02	-0.03	**0.38**		
firmsize	na	na	na	na	na	na	na	na	na
overqualified	**0.33**	**-0.15**	**0.07**	**-0.08**	**-0.05**	-0.05	**-0.10**	**-0.05**	na
underqualified	**-0.50**	**0.12**	0.01	0.02	0.01	0.00	0.07	0.04	na

Germany n = 3688	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	0.00								
woman	-0.03	0.00							
married	**0.05**	**0.35**	**-0.09**						
public	**0.15**	**0.05**	**0.17**	0.01					
part time	**-0.05**	**0.08**	**0.33**	**0.09**	**0.09**				
tenure	0.02	**0.47**	**-0.06**	**0.24**	**0.11**	**-0.05**			
indefinite contract	**0.10**	**0.18**	**-0.05**	**0.12**	**-0.09**	**-0.05**	**0.28**		
firmsize	0.03	**0.05**	**-0.07**	0.01	**0.20**	**-0.09**	**0.16**	**0.08**	
overqualified	**0.55**	0.03	0.00	0.03	0.04	**-0.05**	0.00	**0.06**	-0.02
underqualified	**-0.53**	-0.03	-0.02	**-0.08**	-0.02	-0.02	**-0.04**	**-0.13**	0.04

Greece n = 2079	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	**-0.21**								
woman	**0.12**	**-0.22**							
married	-0.01	**0.45**	-0.05						
public	**0.31**	**0.19**	0.05	**0.18**					
part time	**0.28**	-0.03	**0.14**	**0.06**	**0.23**				
tenure	**0.11**	**0.46**	**-0.11**	**0.34**	**0.38**	0.03			
indefinite contract	**0.19**	**0.14**	**-0.10**	**0.13**	**0.24**	-0.03	**0.46**		
firmsize	**0.13**	**0.07**	-0.03	**0.10**	**0.23**	**-0.10**	**0.15**	**0.20**	
overqualified	**0.34**	**-0.12**	-0.05	-0.04	**-0.06**	**-0.10**	**-0.06**	0.02	**0.06**
underqualified	**-0.37**	**0.06**	-0.02	-0.03	**-0.08**	**-0.07**	-0.04	-0.05	-0.05

Table A1.1. Correlogrammes of independent variables for 20 OECD countries[1], 2001[2] (cont.)

Hungary n = 879	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	0.00								
woman	**0.13**	0.01							
married	0.06	**0.31**	-0.03						
public	**0.10**	0.08	0.03	0.03					
part time	**0.14**	**0.11**	**0.15**	0.04	0.01				
tenure	**0.11**	**0.39**	**0.10**	**0.18**	**0.12**	-0.01			
indefinite contract	na	na	na	na	na	na	na		
firmsize	na	na	na	na	na	na	na	na	
overqualified	**0.29**	-0.07	**-0.10**	-0.01	-0.07	-0.08	-0.05	na	na
underqualified	**-0.13**	0.04	0.07	0.08	0.08	0.01	0.03	na	na

Ireland n = 1457	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	**-0.23**								
woman	**0.12**	**-0.07**							
married	**-0.07**	**0.63**	-0.05						
public	**0.23**	**0.22**	0.06	**0.19**					
part time	0.00	**0.12**	**0.30**	**0.13**	**0.11**				
tenure	**0.09**	**0.46**	**-0.11**	**0.40**	**0.32**	-0.05			
indefinite contract	**0.07**	**0.14**	-0.01	**0.14**	0.02	**-0.22**	**0.38**		
firmsize	**0.10**	-0.03	0.01	0.02	**0.13**	**-0.09**	**0.11**	**0.12**	
overqualified	**0.37**	**-0.14**	-0.03	**-0.09**	-0.01	**-0.09**	**-0.09**	0.01	0.01
underqualified	**-0.40**	**0.17**	-0.05	**0.10**	0.00	0.01	0.07	0.05	-0.04

Italy n = 3257	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	**-0.22**								
woman	**0.13**	**-0.11**							
married	-0.02	**0.41**	**-0.06**						
public	**0.28**	**0.15**	**0.14**	**0.14**					
part time	**0.15**	0.00	**0.26**	0.03	**0.17**				
tenure	**0.05**	**0.49**	-0.02	**0.34**	**0.28**	-0.01			
indefinite contract	**0.07**	**0.20**	-0.04	**0.14**	**0.12**	**-0.08**	**0.41**		
firmsize	**0.18**	**0.08**	-0.04	**0.09**	**0.24**	-0.03	**0.18**	**0.14**	
overqualified	**0.41**	**-0.22**	**-0.11**	**-0.09**	**-0.08**	**-0.10**	**-0.13**	-0.04	**0.07**
underqualified	**-0.24**	**0.14**	0.03	0.03	**0.08**	0.00	**0.09**	**0.06**	0.03

Luxembourg n = 2213	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	**-0.32**								
woman	-0.01	**-0.14**							
married	-0.02	**0.28**	**-0.12**						
public	**0.11**	**0.15**	-0.03	0.04					
part time	-0.03	**0.08**	**0.34**	**0.12**	0.02				
tenure	na	na	na	na	na	na			
indefinite contract	0.02	**0.16**	**-0.08**	**0.11**	**-0.07**	-0.04	na		
firmsize	**0.17**	0.05	**-0.16**	**0.07**	**0.06**	**-0.15**	na	**0.08**	
overqualified	**0.17**	**-0.11**	**-0.07**	-0.02	-0.01	-0.03	na	-0.01	-0.03
underqualified	**-0.36**	**0.25**	-0.04	0.04	0.04	-0.04	na	0.00	0.04

Table A1.1. Correlogrammes of independent variables for 20 OECD countries[1], 2001[2] (cont.)

Netherlands n = 2031	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	**0.10**								
woman	-0.03	**-0.18**							
married	**0.10**	**0.33**	**-0.14**						
public	**0.21**	0.05	**0.14**	-0.01					
part time	-0.03	-0.05	**0.49**	**0.12**	**0.09**				
tenure	**0.08**	**0.46**	**-0.17**	**0.19**	**0.10**	-0.05			
indefinite contract	0.03	**0.19**	**-0.07**	**0.09**	0.00	-0.01	**0.38**		
firmsize	**0.09**	0.03	-0.02	-0.02	**0.24**	-0.03	**0.15**	**0.07**	
overqualified	**0.52**	-0.04	0.00	0.02	0.02	-0.03	0.01	0.02	0.04
underqualified	**-0.76**	**-0.16**	**0.07**	**-0.13**	**-0.06**	0.00	**-0.11**	-0.04	**-0.06**

Poland n = 2285	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	**-0.16**								
woman	**0.24**	0.00							
married	-0.04	**0.40**	**-0.11**						
public	**0.23**	**0.15**	**0.12**	**0.13**					
part time	**0.15**	-0.01	**0.09**	-0.05	0.01				
tenure	na	na	na	na	na	na			
indefinite contract	na	na	na	na	na	na	na		
firmsize	na	na	na	na	na	na	na	na	
overqualified	**0.36**	**-0.08**	**-0.09**	-0.04	**-0.08**	-0.01	na	na	na
underqualified	0.00	**0.07**	**0.06**	0.02	**0.10**	0.03	**-0.08**	na	na

Portugal n = 3859	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	**-0.26**								
woman	**0.20**	**-0.14**							
married	**-0.05**	**0.33**	-0.01						
public	**0.34**	**0.06**	**0.14**	**0.06**					
part time	**0.08**	0.00	**0.14**	-0.04	**0.05**				
tenure	-0.03	**0.48**	-0.01	**0.29**	**0.18**	-0.03			
indefinite contract	**0.04**	**0.19**	-0.03	**0.19**	**0.07**	**-0.09**	**0.45**		
firmsize	**0.17**	**0.05**	0.03	**0.07**	**0.28**	**-0.08**	**0.14**	**0.08**	
overqualified	**0.38**	**-0.23**	0.04	**-0.09**	0.02	-0.03	**-0.12**	-0.03	0.01
underqualified	**-0.07**	**0.04**	-0.04	0.01	**0.06**	-0.02	0.07	0.04	0.01

Spain n = 3615	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	**-0.26**								
woman	**0.19**	**-0.16**							
married	**-0.07**	**0.43**	**-0.11**						
public	**0.30**	**0.10**	**0.12**	**0.10**					
part time	0.02	**-0.06**	**0.23**	**-0.06**	-0.02				
tenure	**0.08**	**0.48**	**-0.06**	**0.34**	**0.24**	**-0.12**			
indefinite contract	**0.12**	**0.26**	-0.02	**0.23**	**0.11**	**-0.11**	**0.58**		
firmsize	**0.19**	**0.10**	-0.02	**0.08**	**0.28**	**-0.11**	**0.20**	**0.11**	
overqualified	**0.26**	**-0.18**	**-0.07**	**-0.08**	**-0.11**	0.00	**-0.11**	**-0.08**	0.04
underqualified	**-0.13**	**0.12**	**0.05**	**0.06**	0.02	0.00	**0.16**	**0.13**	0.00

Table A1.1. Correlogrammes of independent variables for 20 OECD countries[1], 2001[2] (cont.)

Sweden n = 2330	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	**-0.35**								
woman	**0.07**	**0.06**							
married	0.03	**0.39**	**0.08**						
public	**0.24**	**0.13**	**0.38**	**0.15**					
part time	**-0.10**	**0.06**	**0.21**	0.03	**0.07**				
tenure	na	na	na	na	na	na			
indefinite contract	0.00	**0.21**	**-0.07**	**0.11**	-0.01	**-0.19**	na		
firmsize	**0.06**	-0.01	-0.04	0.01	0.05	**-0.06**	na	**0.06**	

Switzerland n = 2260	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	**-0.09**								
woman	-0.01	-0.04							
married	**0.08**	**0.38**	**-0.19**						
public	**0.24**	**0.08**	**0.13**	**0.06**					
part time	0.05	**0.09**	**0.39**	**0.13**	**0.11**				
tenure	-0.02	**0.57**	**-0.19**	**0.28**	**0.08**	**-0.05**			
indefinite contract	**0.13**	**0.29**	-0.02	**0.23**	**-0.07**	0.02	**0.17**		
firmsize	0.04	**0.08**	**-0.12**	**0.08**	**0.11**	**-0.11**	**0.14**	0.04	
overqualified	**0.52**	**-0.12**	-0.03	0.01	0.00	0.01	**-0.07**	0.00	0.04
underqualified	na	na	na	na	na	na	na	na	na

United Kingdom n = 7960	attainment	experience	woman	married	public	part time	tenure	indefinite contract	firmsize
experience	**-0.28**								
woman	-0.01	0.00							
married	0.01	**0.30**	**-0.05**						
public	**0.14**	**0.09**	**0.19**	0.02					
part time	**-0.11**	**0.11**	**0.37**	**0.07**	**0.09**				
tenure	**-0.11**	**0.43**	-0.02	**0.15**	**0.08**	0.01			
indefinite contract	**-0.04**	**0.08**	-0.03	**0.07**	**-0.05**	**-0.07**	**0.15**		
firmsize	**0.11**	-0.02	**-0.04**	0.01	0.02	**-0.12**	0.00	-0.01	
overqualified	**0.43**	**-0.12**	-0.01	-0.02	**0.04**	0.02	**-0.03**	**-0.03**	0.02
underqualified	**-0.61**	**0.25**	-0.01	**0.05**	-0.03	**0.03**	**0.09**	**0.04**	0.01

United States n = 49571	attainment	experience	woman	married	public	part time	firmsize
experience	**-0.08**						
woman	**0.05**	0.00					
married	**0.10**	**0.29**	**-0.07**				
public	**0.18**	**0.09**	**0.09**	**0.06**			
part time	**-0.09**	**-0.13**	**0.14**	**-0.09**	**-0.02**		
firmsize	**0.14**	0.01	**0.05**	0.01	**0.25**	**-0.05**	
overqualified	**0.40**	**-0.03**	-0.01	0.01	0.01	0.00	0.01
underqualified	**-0.63**	**0.07**	**-0.01**	**-0.03**	**-0.10**	**0.05**	**-0.09**

Note: Bolded figures denote significance at the 1% level.
1. For Canada, due to confidentiality, these correlogrammes were not available.
2. Except Hungary (1997); and Poland and Switzerland (2000).
Source: ECHP, CHER, BHPS, CPS, CNEF and HILDA and authors' calculations.

Table A2.1. Single-equation and bias-corrected tertiary gross wage premia and the conditional marginal effect

ECHP data, 2001 [1]

A. Men

	Heckman wage equation			Mincer coefficients (*edu3*)		*Percentage change from upper-secondary wage* [4]			Sample size of equations		
	Coefficient of *edu3* [2]	Correction of *edu3* coefficient [3]	Conditional marginal effect	Large sample	Baseline	**Conditional marginal effect**	**Large sample Mincer**	Baseline	Heckman Selection	Heckman Wage[5]	Baseline
Austria	0.344	0.038	0.382	0.374	0.431	**46.5**	**45.4**	53.9	2166	1628	1160
Belgium	0.331	0.001	0.332	0.332	0.334	**39.3**	**39.4**	39.7	1588	1232	865
Denmark	0.372	0.014	0.386	0.386	0.387	**47.1**	**47.1**	47.3	1535	1328	827
Finland	0.373	0.011	0.384	0.389	0.424	**46.8**	**47.5**	52.8	2369	1763	958
France	0.504	0.002	0.507	0.511	0.463	**66.0**	**66.7**	58.9	3830	2807	1568
Germany	0.376	0.036	0.412	0.408	0.383	**51.0**	**50.4**	46.7	4302	3423	2089
Greece	0.288	0.012	0.301	0.308	0.303	**35.1**	**36.1**	35.4	3299	2431	1265
Ireland	0.413	0.017	0.430	0.444	0.434	**53.7**	**55.8**	54.3	1574	1224	813
Italy	0.293	0.020	0.313	0.313	0.411	**36.8**	**36.8**	50.8	5243	3653	1940
Netherlands	0.347	0.007	0.354	0.351	0.348	**42.4**	**42.0**	41.6	1968	1714	1175
Portugal	0.409	0.040	0.449	0.459	0.505	**56.7**	**58.2**	65.7	3821	3028	2149
Spain	0.229	0.008	0.237	0.243	0.234	**26.7**	**27.5**	26.4	4434	3229	2246
Luxembourg[6]	0.427	0.016	0.443	0.438	0.424	**55.7**	**55.0**	52.8	1891	1610	1375
Sweden[6]	0.261	0.018	0.279	0.292	0.260	**32.2**	**33.9**	29.7	3590	2896	1074

B. Women

	Heckman wage equation			Mincer coefficients (*edu3*)		*Percentage change from upper-secondary wage* [4]			Sample size of equations		
	Coefficient of *edu3* [2]	Correction of *edu3* coefficient [3]	Conditional marginal effect	Large sample	Baseline	**Conditional marginal effect**	**Large sample Mincer**	Baseline	Heckman Selection	Heckman Wage[5]	Baseline
Austria	0.064	0.153	0.217	0.197	0.287	**24.3**	**21.7**	33.2	2151	1241	805
Belgium	0.300	0.019	0.319	0.321	0.310	**37.6**	**37.9**	36.3	1778	1096	750
Denmark	0.260	0.029	0.289	0.290	0.355	**33.5**	**33.7**	42.6	1611	1250	758
Finland	0.296	0.047	0.344	0.366	0.358	**41.0**	**44.2**	43.0	2443	1657	908
France	0.438	0.031	0.468	0.479	0.452	**59.7**	**61.4**	57.1	4018	2242	1323
Germany	0.405	0.072	0.477	0.473	0.406	**61.1**	**60.5**	50.1	4485	2992	1599
Greece	0.270	0.134	0.403	0.408	0.386	**49.7**	**50.4**	47.1	3273	1268	814
Ireland	0.421	0.069	0.490	0.485	0.520	**63.2**	**62.4**	68.2	1631	882	644
Italy	0.158	0.085	0.242	0.241	0.328	**27.4**	**27.3**	38.8	5378	2129	1314
Netherlands	0.298	0.086	0.385	0.377	0.378	**46.9**	**45.8**	45.9	2252	1530	856
Portugal	0.608	0.008	0.616	0.617	0.652	**85.1**	**85.3**	91.9	3873	2183	1710
Spain	0.153	0.068	0.222	0.220	0.313	**24.8**	**24.6**	36.8	4502	1930	1369
Luxembourg[6]	0.383	0.110	0.494	0.426	0.400	**63.8**	**53.1**	49.2	1896	978	838
Sweden[6]	0.183	0.033	0.216	0.245	0.219	**24.1**	**27.7**	24.5	3632	2707	1256

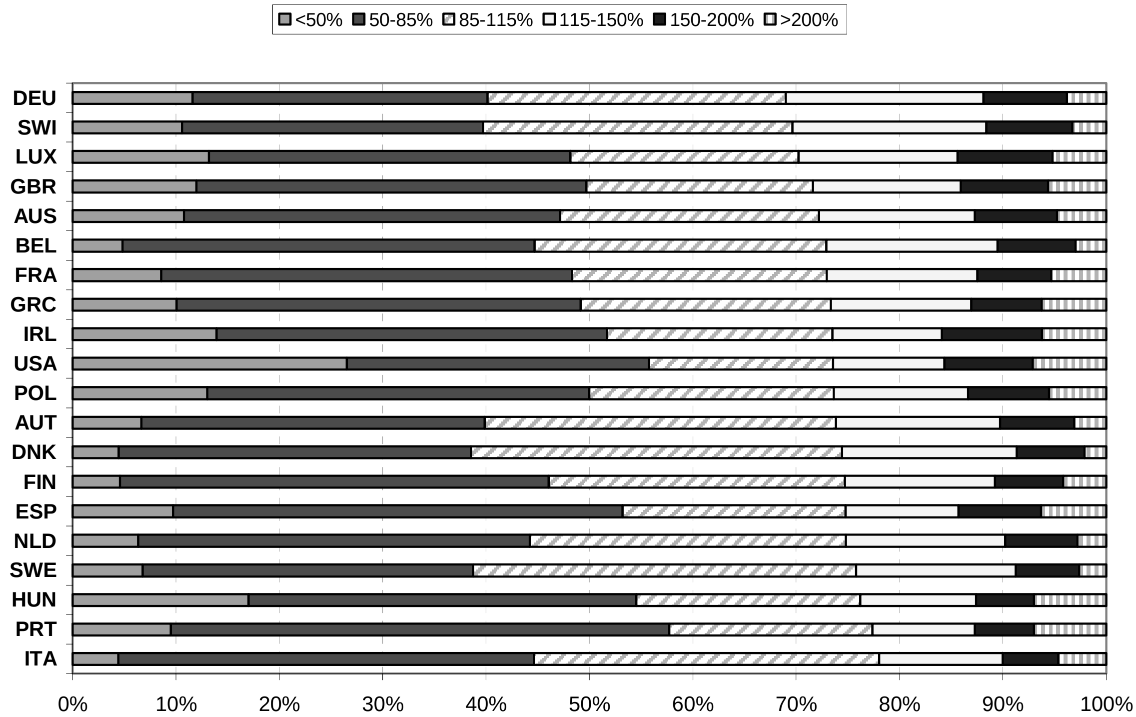
1. Except Hungary (1997); and Poland and Switzerland (2000).
2. Second stage of Heckman's two-stage procedure that incorporates the variables known from the main text (except married) plus the residual of the selection model (first stage)
3. Corresponds to the product of the "selection effect" and the difference in odds ratios of non-selection between the tertiary- and the upper-secondary degree holders.
4. The numbers in these three columns equals [exp(x)–1], with x denoting the coefficients shown in each of the preceding three columns.
5. Sample size identical with large-sample Mincer equation
6. Estimations based on net hourly earnings.

Source: Authors' calculations.

Figure 1a. Wage equation sample distribution 2001[1]: Gross[2] hourly wage rate of men

Relative to country average for men

Countries sorted by decreasing frequency of persons earning above 115% of average hourly wage of men

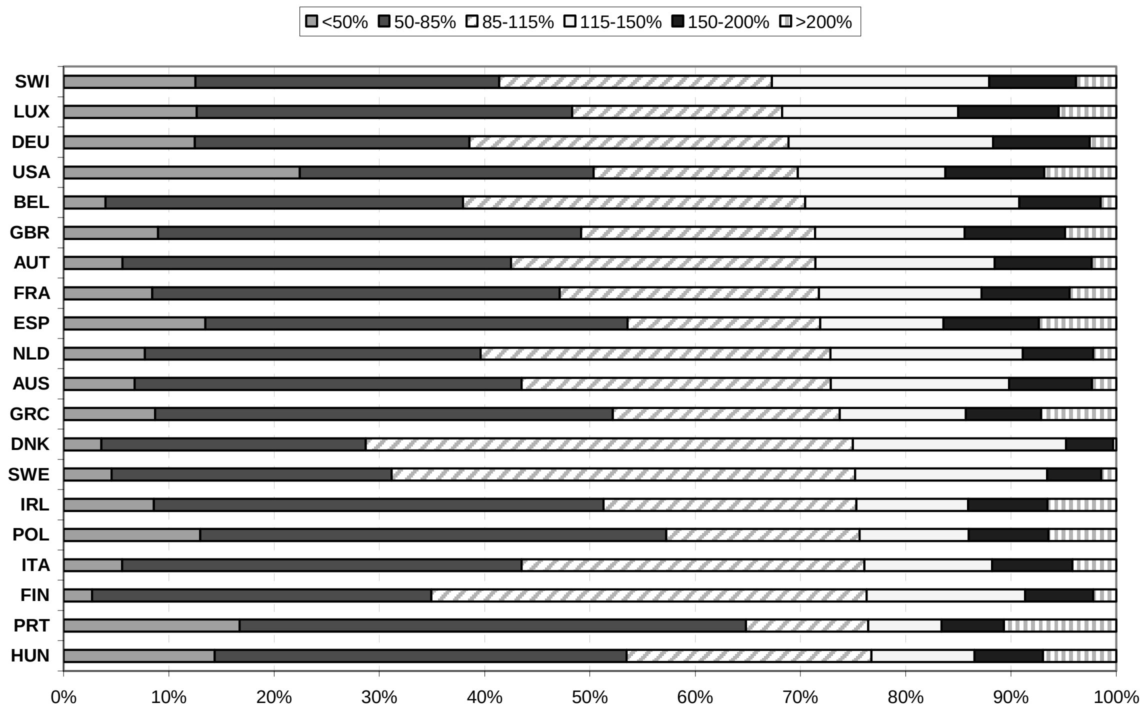


1. Except Hungary (1997); and Poland and Swizerland (2000).
2. Net wage for Hungary, Luxembourg, Sweden, and Switzerland.
Source: ECHP, CHER, BHPS, CPS, CNEF and HILDA.

Figure 1b. Wage equation sample distribution 2001[1]: Gross[2] hourly wage rate of women

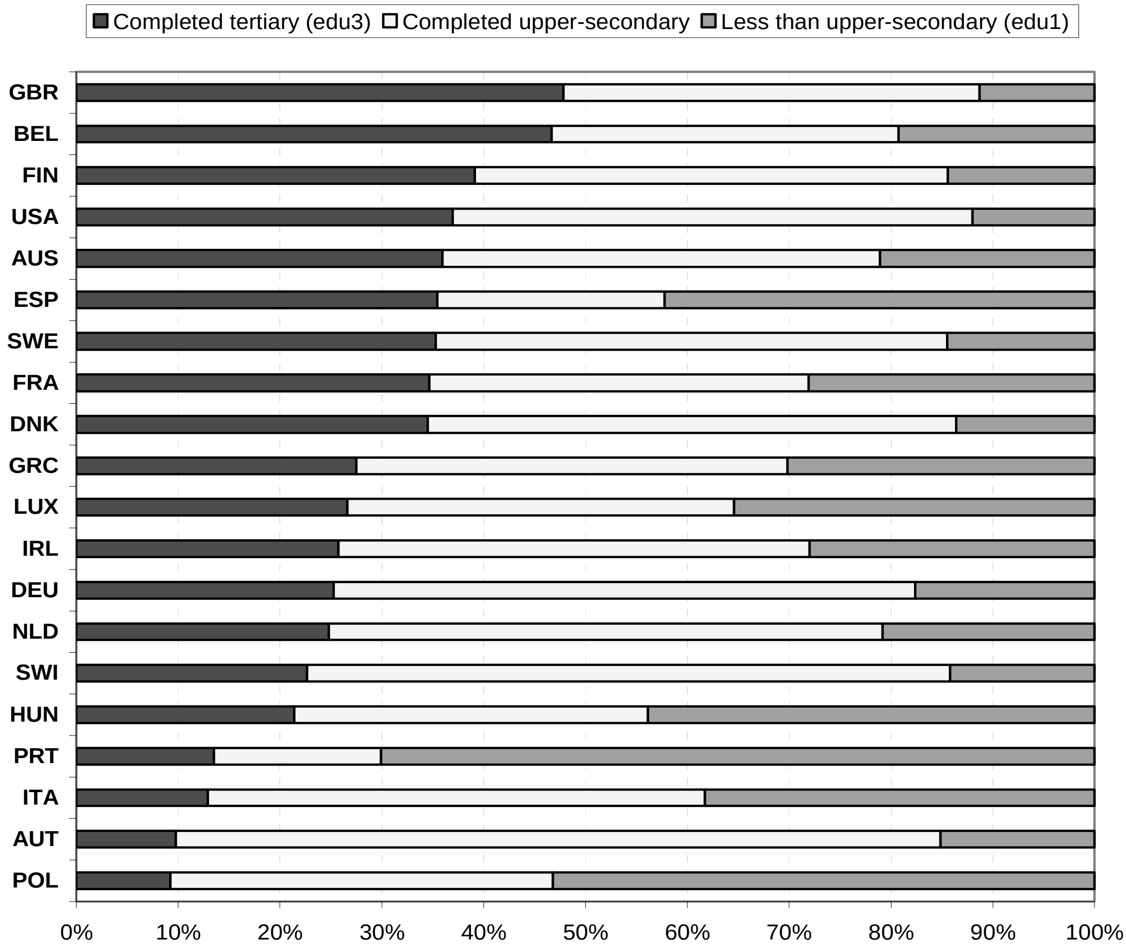
Relative to country average for women

Countries sorted by decreasing frequency of women earning above 115% of gender-average hourly wage



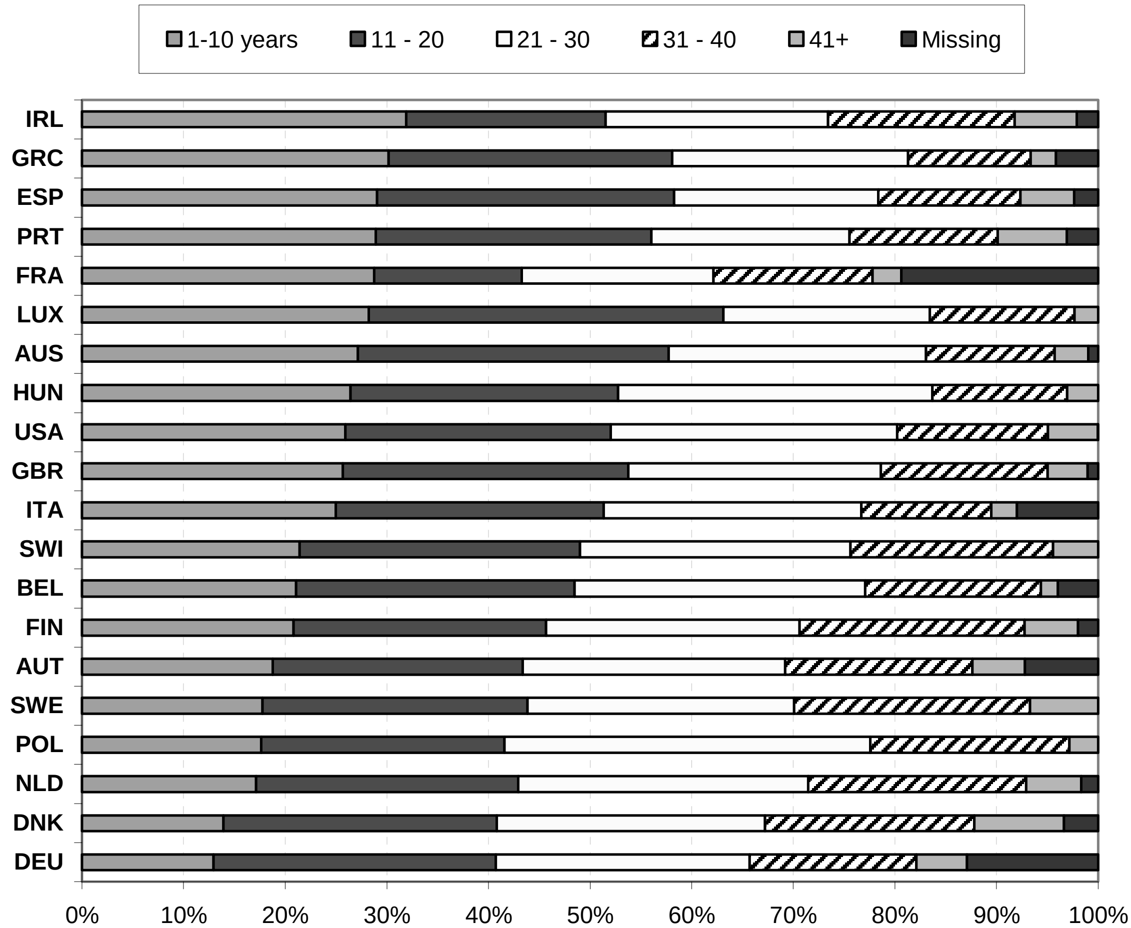
1. Except Hungary (1997); and Poland and Swizerland (2000).
2. Net wage for Hungary, Luxembourg, Sweden, and Switzerland.
Source: ECHP, CHER, BHPS, CPS, CNEF and HILDA.

Figure 2. Wage equation sample distribution 2001[1]
: Educational attainment



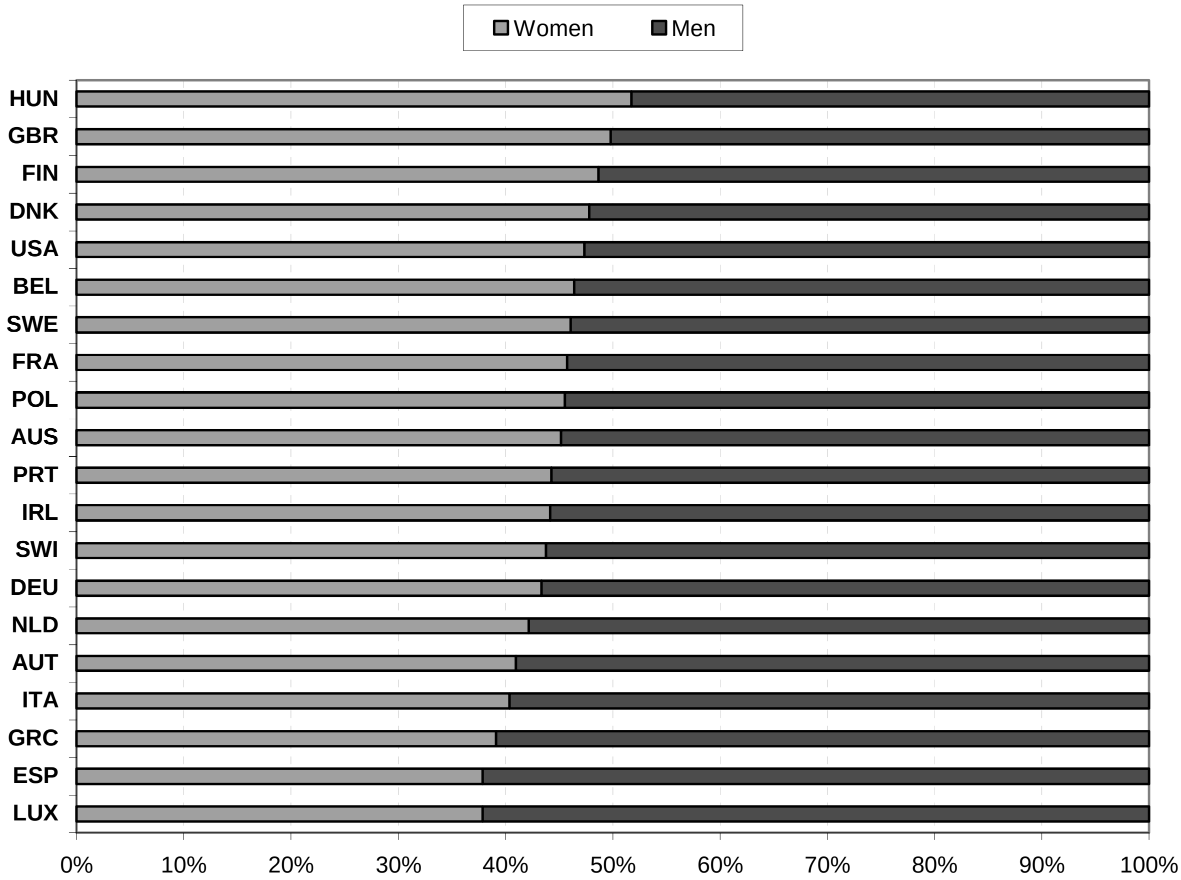
1. Except Hungary (1997); and Poland and Swizerland (2000).
Source: ECHP, CHER, BHPS, CPS, CNEF and HILDA.

Figure 3. Wage equation sample distribution 2001[1]: Labour market experience



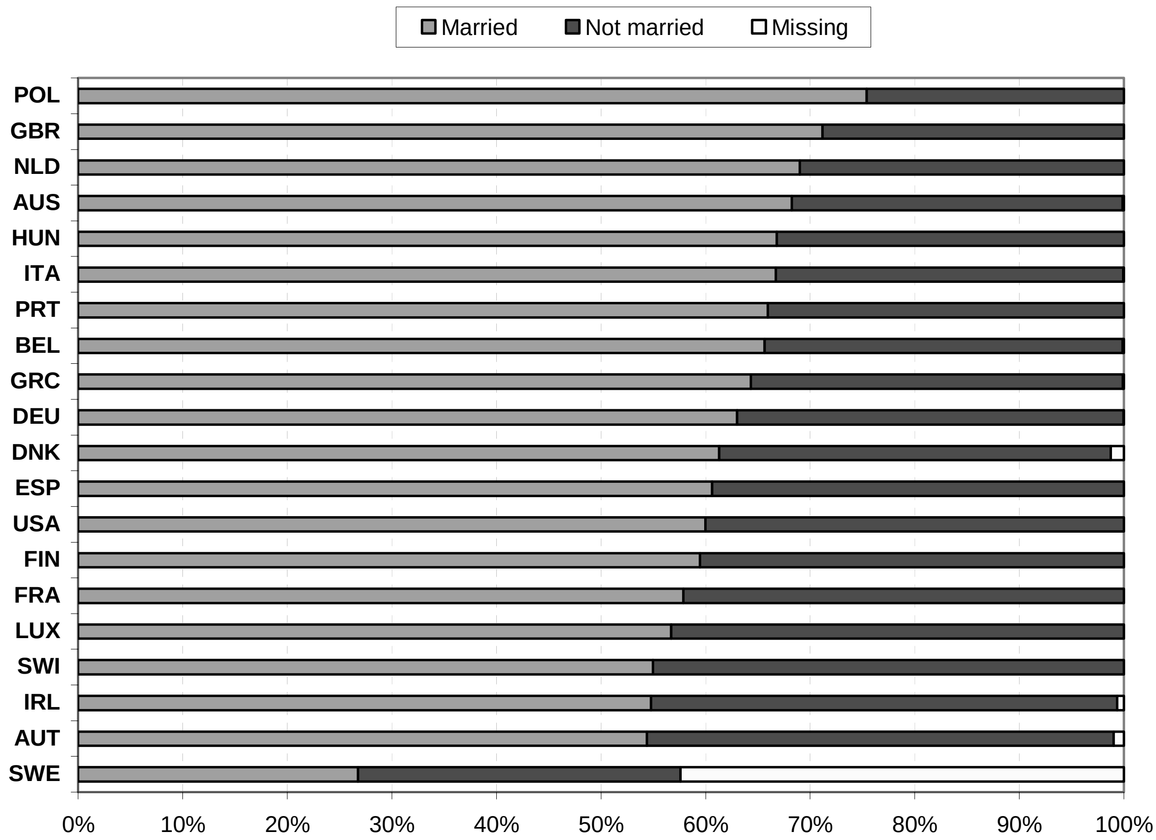
1. Except Hungary (1997); and Poland and Swizerland (2000).
Source: ECHP, CHER, BHPS, CPS, CNEF and HILDA.

Figure 4. Wage equation sample distribution 2001[1]: Gender



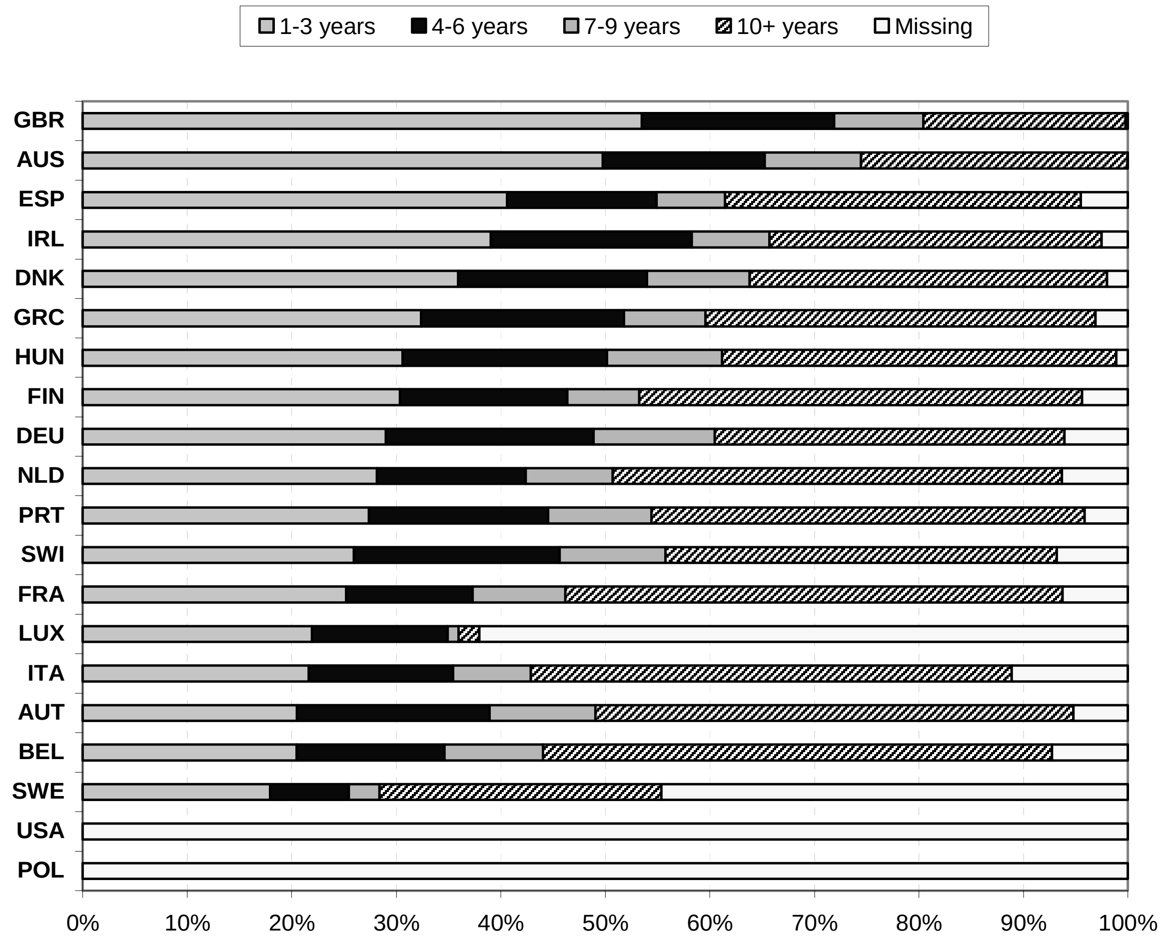
1. Except Hungary (1997); and Poland and Swizerland (2000).
Source: ECHP, CHER, BHPS, CPS, CNEF and HILDA.

Figure 5. Wage equation sample distribution 2001[1]: Married



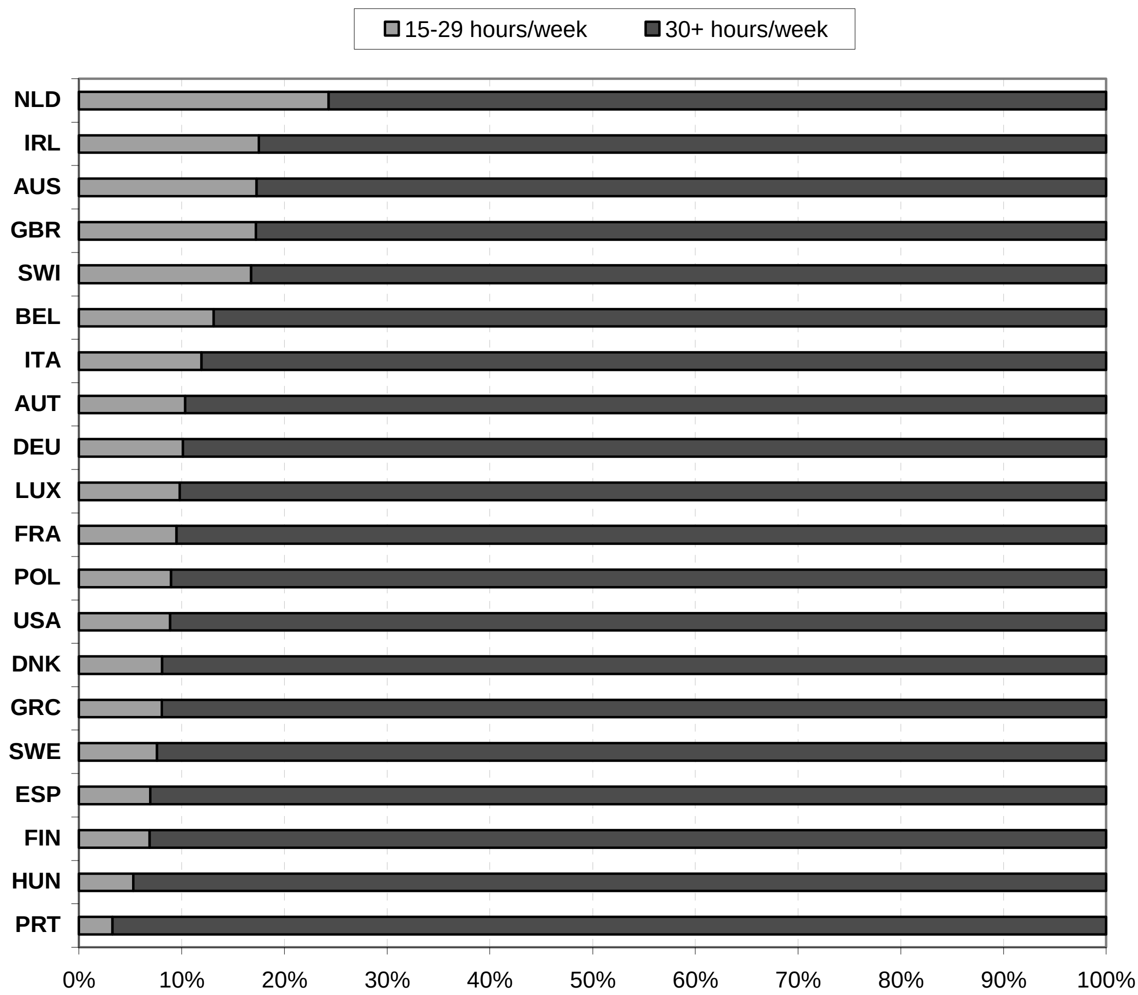
1. Except Hungary (1997); and Poland and Swizerland (2000).
Source: ECHP, CHER, BHPS, CPS, CNEF and HILDA.

Figure 6. Wage equation sample distribution 2001[1]: Tenure



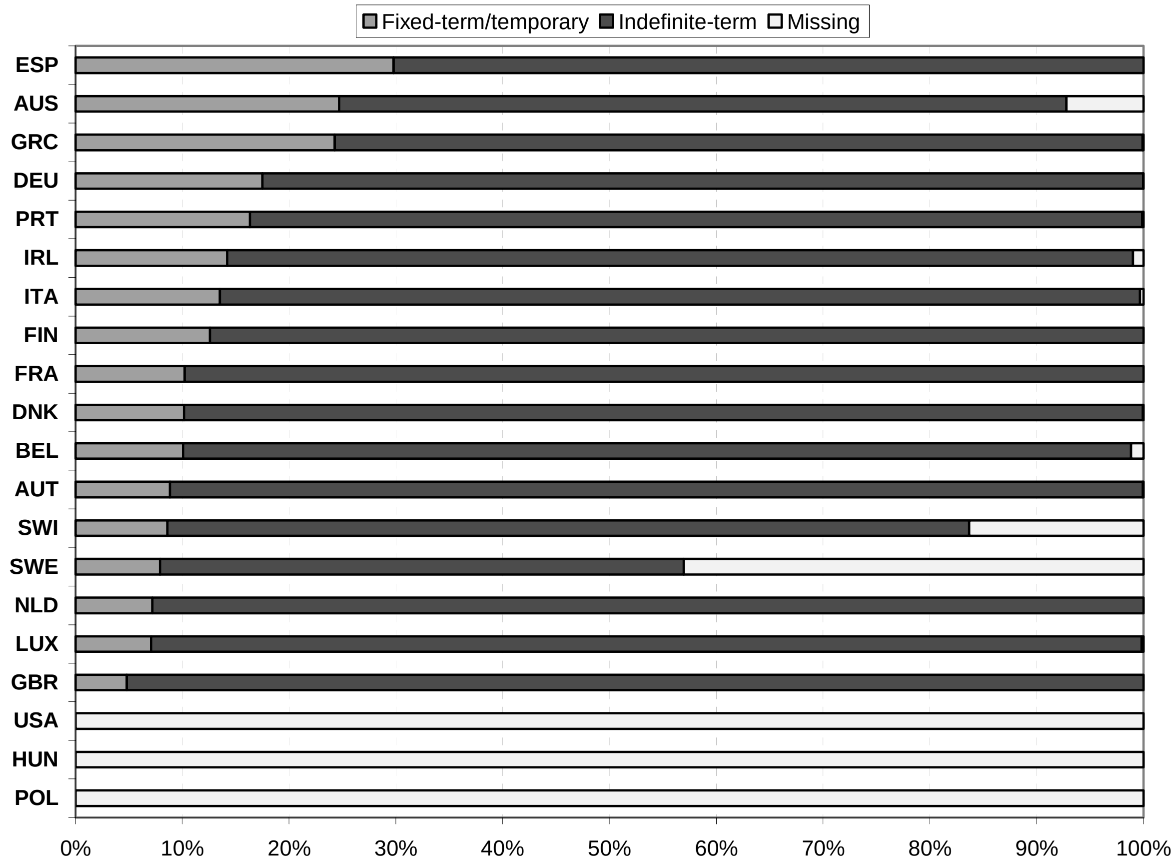
1. Except Hungary (1997); and Poland and Swizerland (2000).
Source: ECHP, CHER, BHPS, CPS, CNEF and HILDA.

Figure 7. Wage equation sample distribution 2001[1]: Part-time indicator



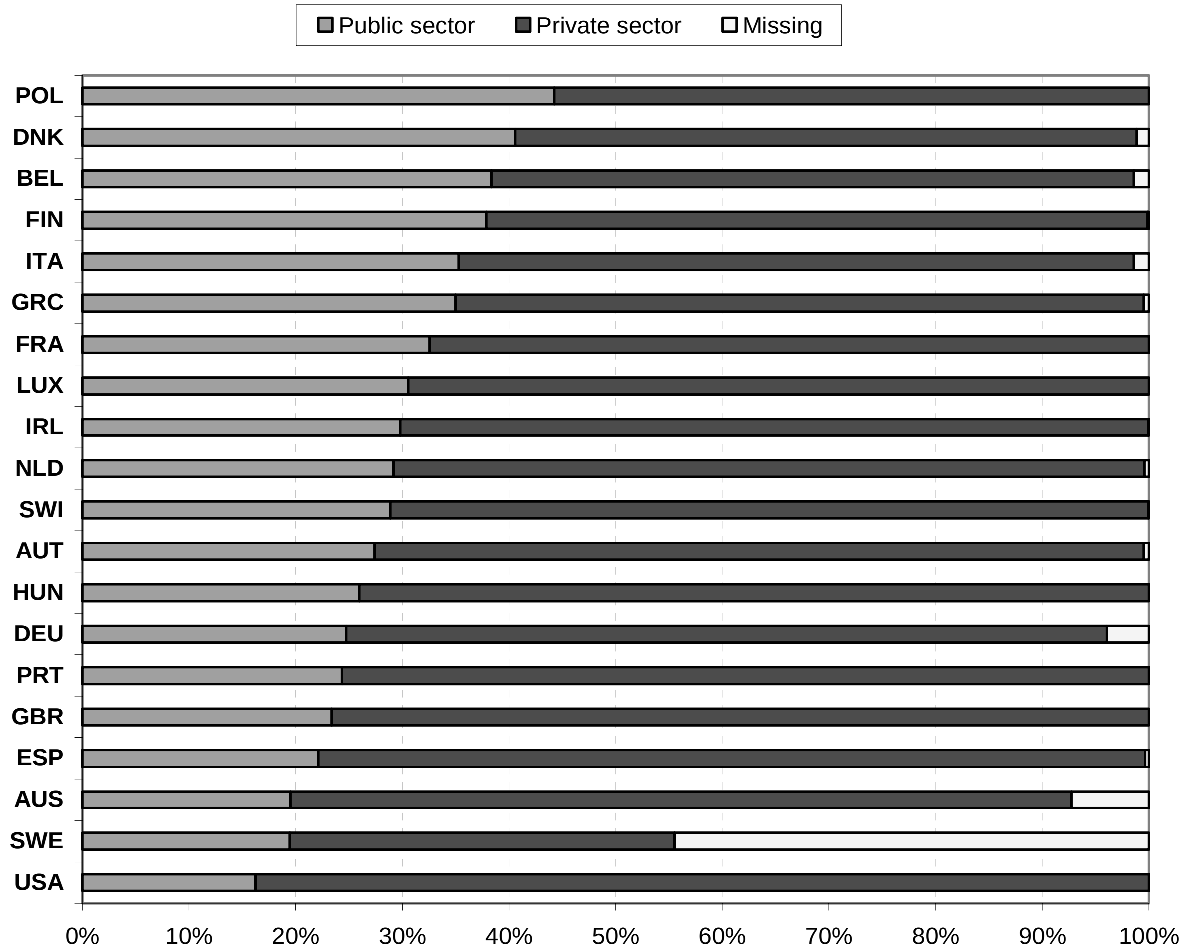
1. Except Hungary (1997); and Poland and Swizerland (2000).
Source: ECHP, CHER, BHPS, CPS, CNEF and HILDA.

Figure 8. Wage equation sample distribution 2001[1]: Type of contract



1. Except Hungary (1997); and Poland and Swizerland (2000).
Source: ECHP, CHER, BHPS, CPS, CNEF and HILDA.

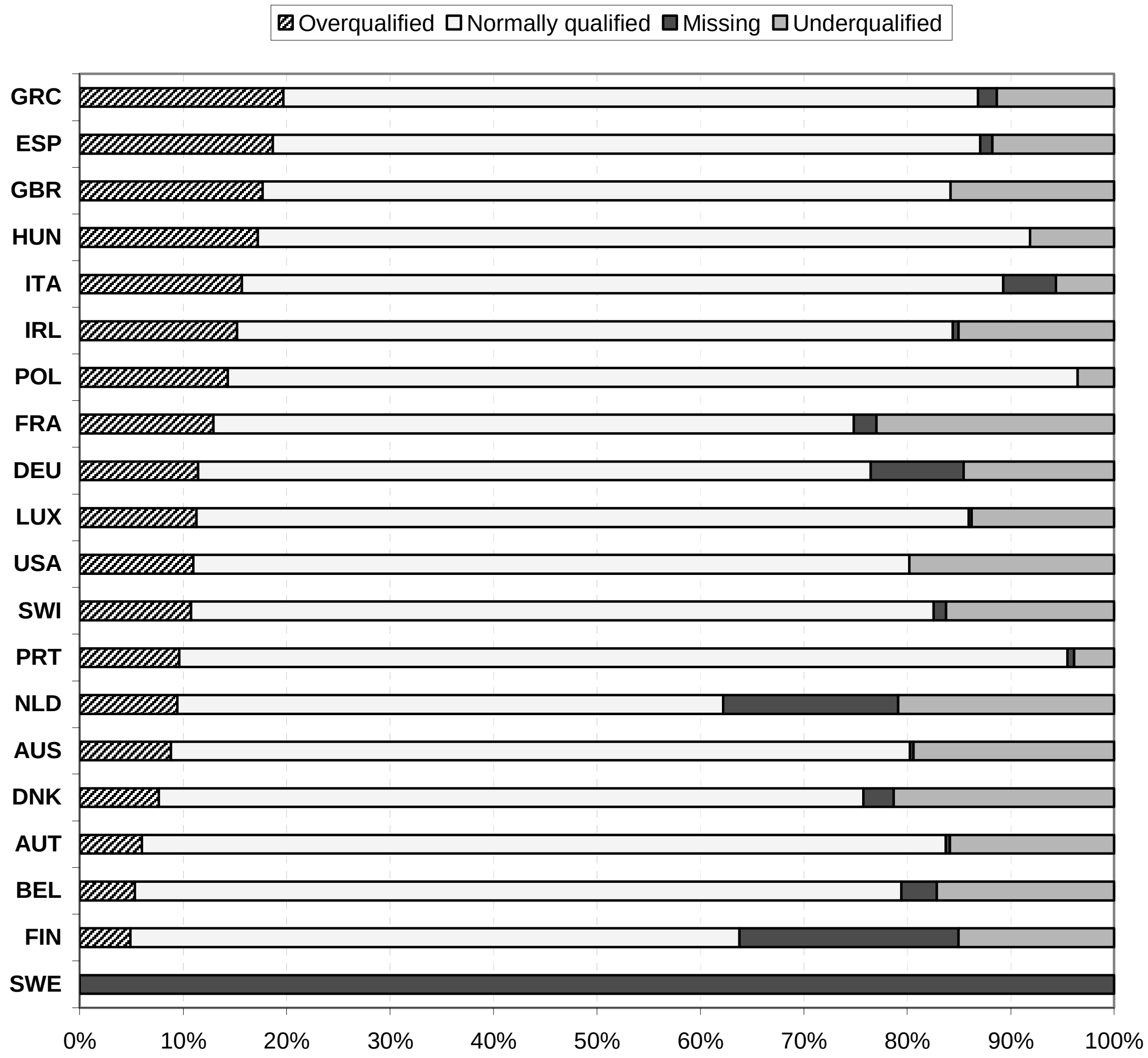
Figure 9. Wage equation sample distribution 2001[1]: Public *versus* private sector



1. Except Hungary (1997); and Poland and Swizerland (2000).

Source: ECHP, CHER, BHPS, CPS, CNEF and HILDA.

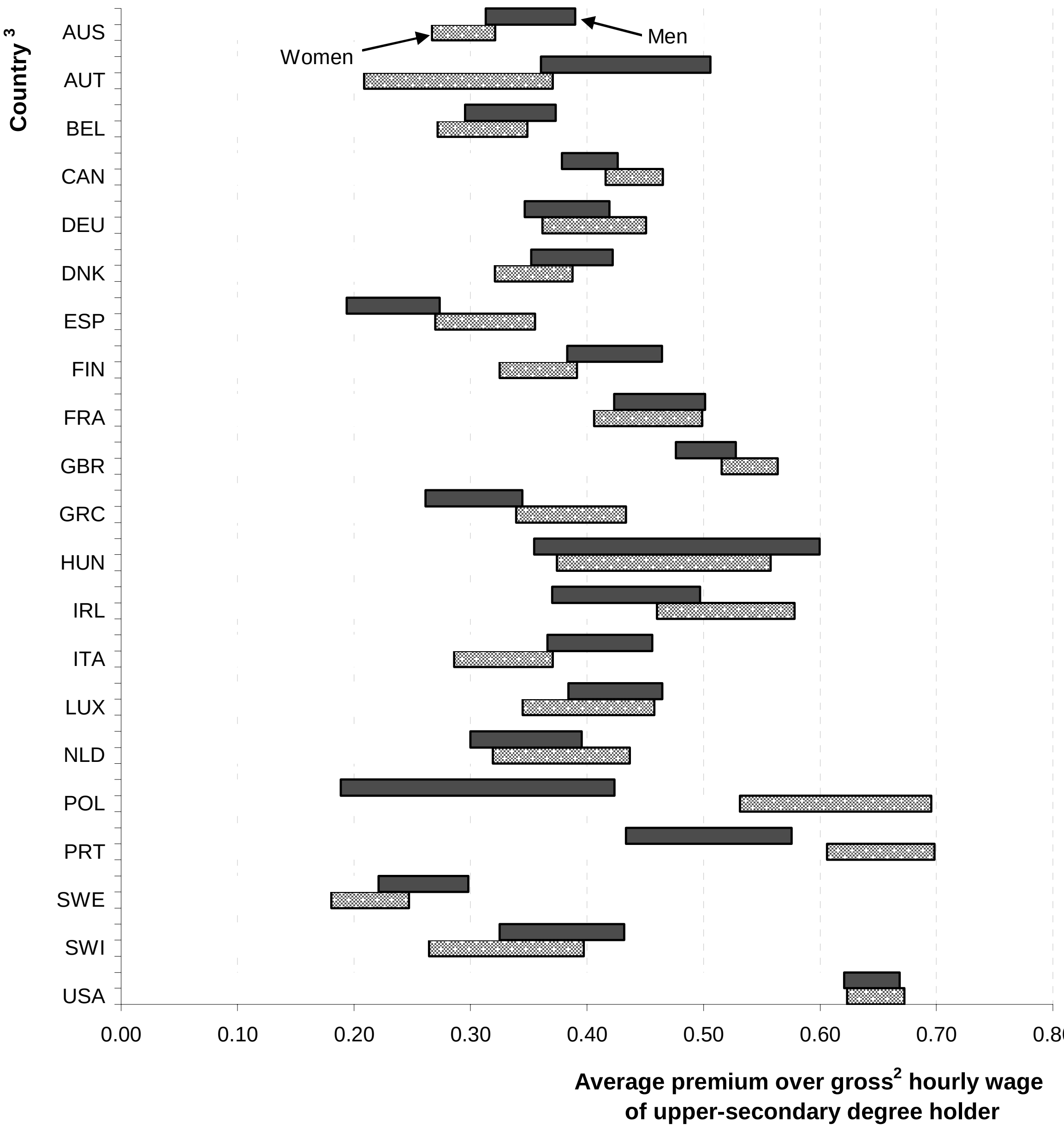
Figure 10. Wage equation sample distribution 2001[1]: Over- or under-qualified for current occupation



1. Except Hungary (1997); and Poland and Swizerland (2000).
Source: ECHP, CHER, BHPS, CPS, CNEF and HILDA.

Figure 11. Male-female differences in tertiary-education coefficients

90% confidence intervals of point estimates, 2001 [1]

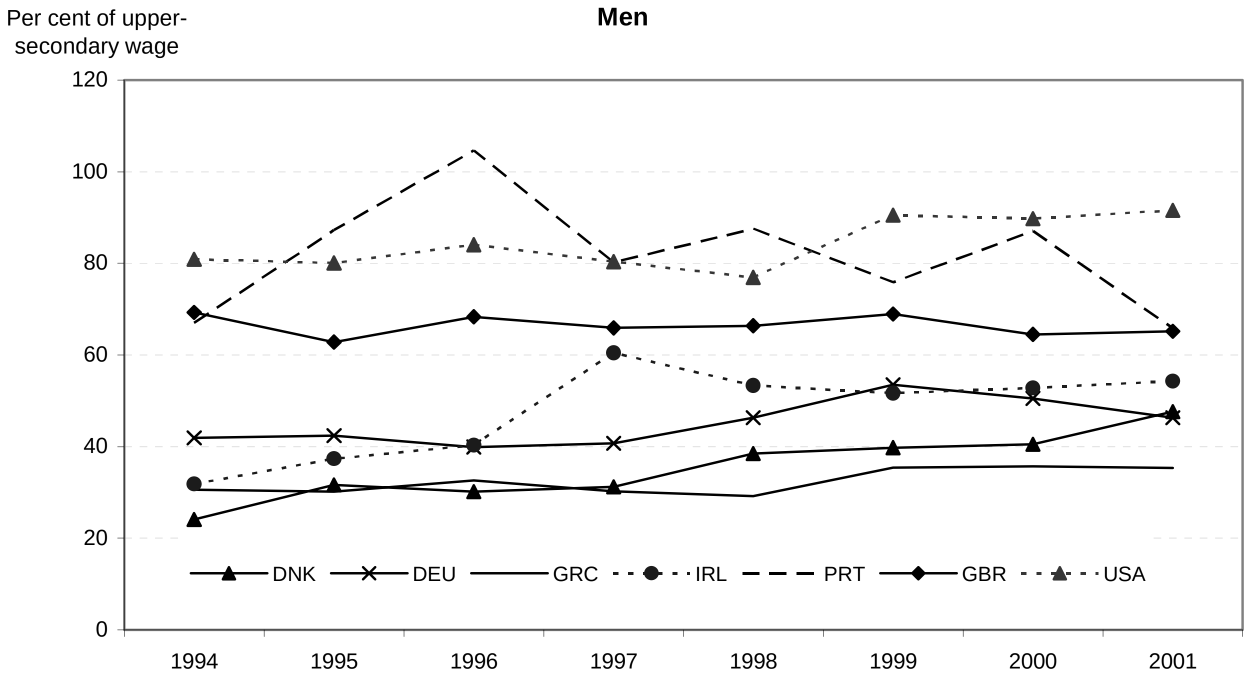


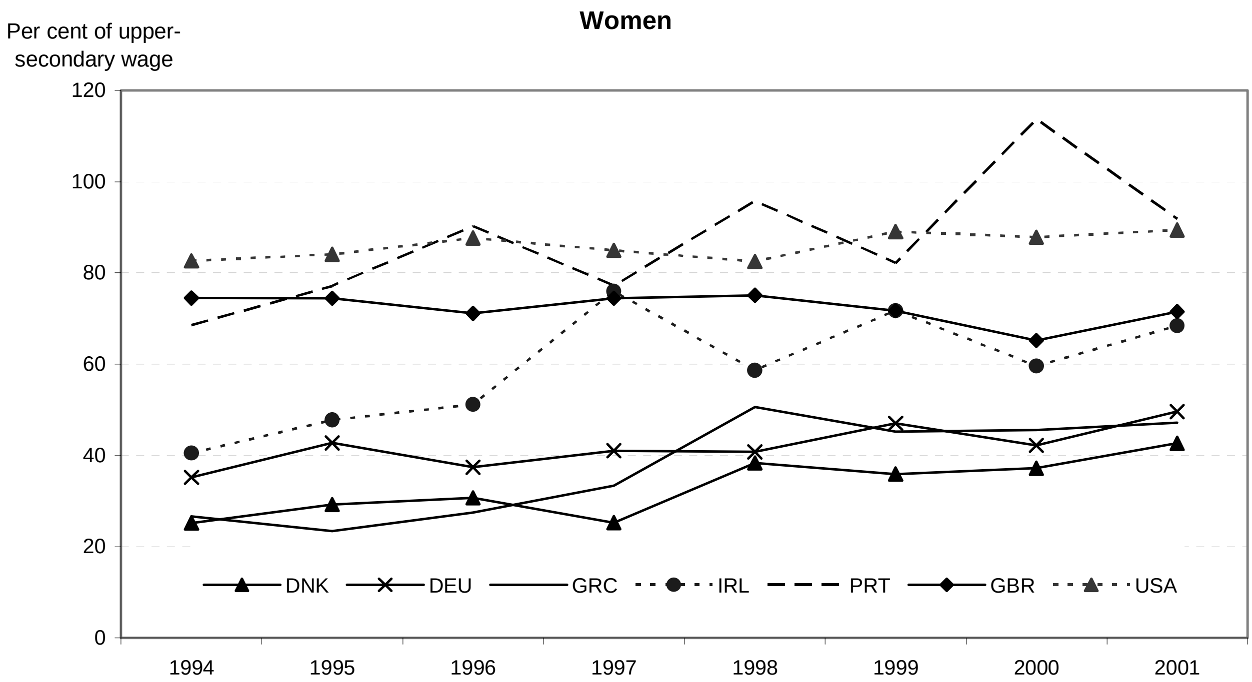
1. Except Hungary (1997); and Poland and Swizerland (2000).
2. Net wage for Hungary, Luxembourg, Poland, and Switzerland.
3. Upper bar: men; lower bar: women.

Source: Authors' calculations.

Figure 12. Evolution of gross wage *premia* for selected countries

1994-2001

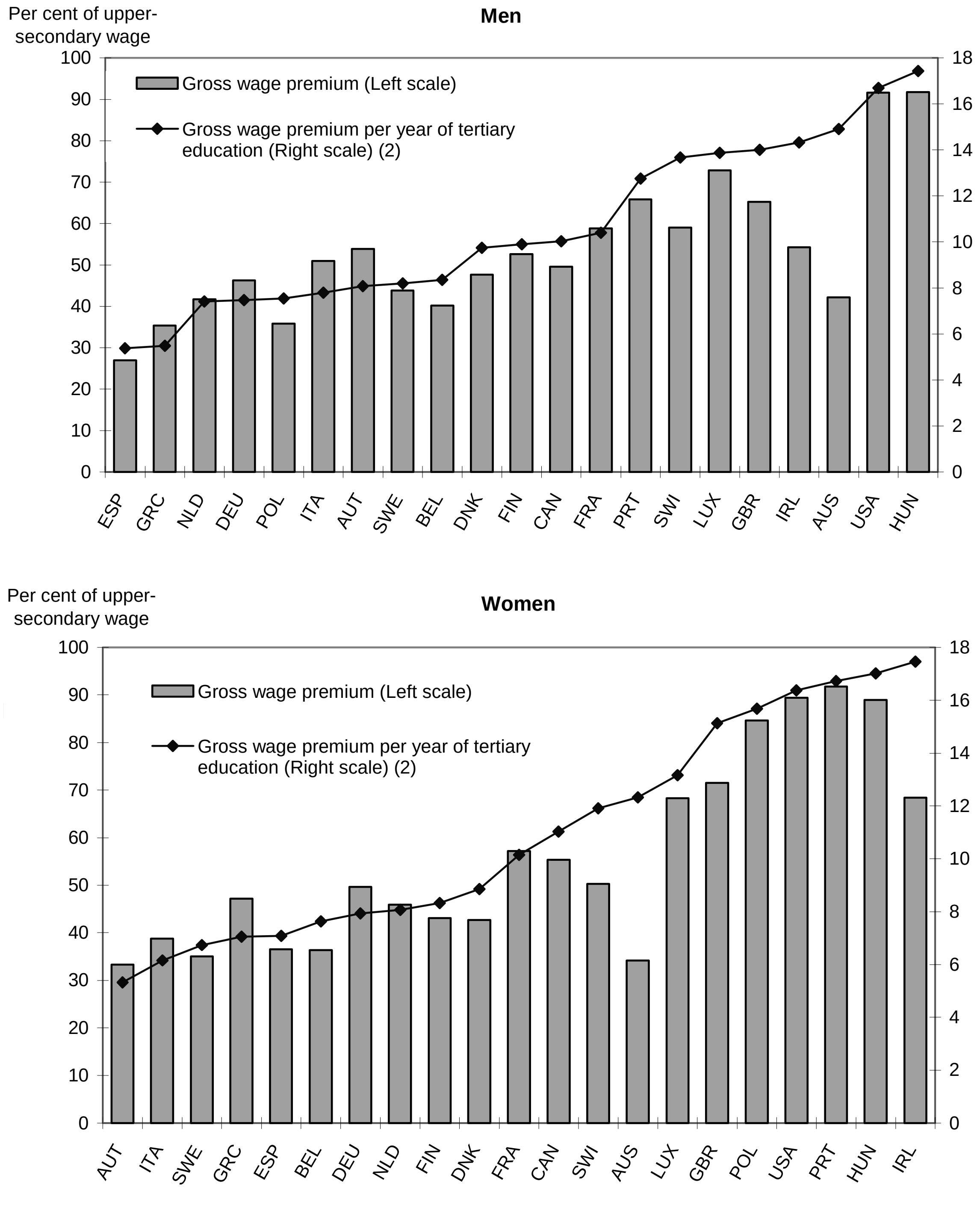




Source: Authors' calculations.

Figure 13. Gross wage *premia*

2001 [1]



1. Except Hungary (1997); and Poland and Swizerland (2000).

2. The total wage premium associated with a tertiary education level is converted to an annual basis by taking into account the duration of tertiary studies.

Source: Authors' calculations.

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